AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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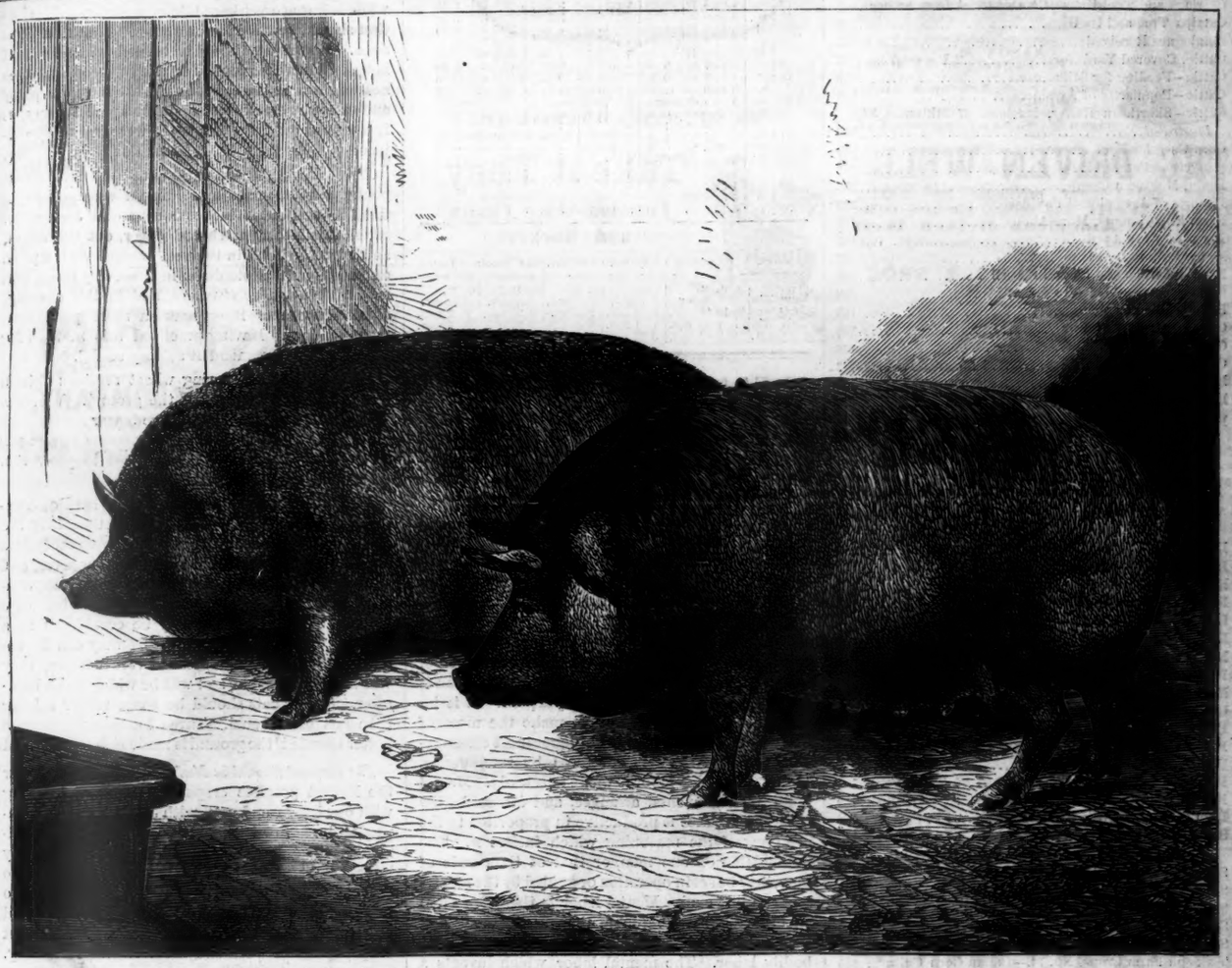

BLACK DORSET PIGS.—*Drawn and Engraved for the American Agriculturist.*

Those who have not traveled in European countries, can hardly realize the strongly marked and peculiar distinctions, which exist between localities that are very near together. "So near, and yet so far" apart are these different localities, that the stranger is surprised, if not bewildered. Thus in the geographically small country, Great Britain, which has but a little larger area than the State of New York, there exist not only many different languages, dialects, customs, and habits, but a very large variety of domestic animals. Several different races of horses, no less than nine distinct breeds of cattle, more than that number of breeds of sheep, and an astonishing variety of black, white, spotted, large, and small swine. A state of things like this could not occur in America, and it is owing to the peculiar character of the British people, slow to change, strongly prejudiced, obstinate even in what they think proper, and averse to travel and removal, that this curious condition of things exists. Here we are apt to change, fond of new things, and in fact anxious to discover something new, and always ready to overthrow all our plans, and to try experiments in some new direction. Thus, with us, in a few years a breed of animals, which may become popular, spreads here and there over the whole country, and becomes generally distributed. Our people move frequently from east to west, and carry with them some old ideas, but rapidly appropriate those which they find current in their new homes, while in England there are herds and flocks, which have been kept continuously for a century. It is to this peculiar character that we owe the different breeds of pigs that have been imported from England; the Essex, Berkshire, Suffolk, Yorkshire, Lancashire, and others. Doubtless we have become possessed of the best of English swine, although there are breeds or varieties of them which are still generally unknown with us. Among the latter is that which forms the subject of the above engraving, the Black Dorset. This is undoubtedly very nearly the same, in all practical respects, as the well known Essex breed, which has become so popular in this country. The origin of the Black Dorset is as follows:—About 30 years ago, two black sows were procured from Turkey by an English gentleman named Coates. These were bred to a Chinese boar, and the progeny were, in turn, bred to a Neapolitan boar. Since then, the blood of Mr. Fisher Hobbs' Essex swine has been infused into the breed, and in the end the result is a black pig so much like the Essex, that the difference is only evident in the name. They have all the excellent points of the Essex, with perhaps a tendency to greater size; having been brought to weigh 300 lbs. at 9 months, and 600 lbs. at 18 months. From the Neapolitan they inherit a fine hide, and thin hair, with the consequent tenderness and impatience of cold and rigorous weather. As with all rapid feeders, the flesh is soft, and the fat oily, when forced to their utmost growth; when moderately well-fed and grazed for a season, or subsisted upon the waste of a dairy, the flesh is of superior quality, and not over fat. The original breeder of these swine is still living, and has been awarded a prize annually in twenty-four out of twenty-five years.

Contents for April, 1878.

Agriculture in Kansas.....137
Among the Farmers, No. 27.—Corn and Cob Meal; Bag Holder; Stealing Poultry; Blood and Breeding; Pigs in California Drouth; Irish Butter; An Irish Dairymaid.....134-135
Artificial Fertilizers—How to Use.....139
Bee Notes for April.....130
Black Dorset Swine.....*Illustrated*..121
Boys and Girls' Department.—Aunt Sue's Chats.—An Interesting Game, Word Making; Log Cabin Patchwork.—Young Microscopists' Club; Optical Illusion, Sugar Louse, Fish Scales, Brook Silk, Dipping Tube, Revolving Globe, Aquarium, Eel Pot.—Aunt Sue's Puzzle Box—A Spring Day in the Country.....15 *Illustrations*..145-148
Carriage and Tool House Combined..4 *Illustrations*..140
Catalpa Tree and Its Uses.....142
Catalogues Received.....153-154
Cattle, Covered Yards for.....2 *Illustrations*..137
Cattle—Feeding for Milk.....139
Cattle—Popularity of Ayrshires.....139
Cattle—Shorthorn Heifer, Duchess of Hillhurst 331. *Illustrated*.....133
Corn Used for Fuel.....140
Dangerous Pet.....142
Drain, Making a Cheap.....*Illustrated*..136
Exports of Agricultural Produce.....129
Farm Experiments, More About.....129
Farm Work in April.....122
Fence Building, Aids in.....*Illustrated*..137
Flower Garden and Lawn in April.....124
Fodder Crops—Which to Select.....138
Fruit Garden in April.....123
Gardens, Irrigating Our.....143
Goat Keeping for Profit.....136
Grape Vine.....2 *Illustrations*..142-143
Horses, Exportation of.....133
House—A Cottage Costing $800 to $1,050.....4 *Ill*..132
Household Department,—Home Topics.—After the Kindergarten; Education at Home; Mental Strain; Unbleached Window Shades; Rice and Tapioca Pudding; Tapioca Pudding with Eggs.—Another Wood Box; A Strawberry Huller; Washing and Washing Machines; Sensible Advice About Eggs; The Tin Pan Nuisance.....3 *Illustrations*..143-145
Humbugs, Sundry.....126
Irrigating Our Gardens.....143
Kitchen and Market Garden in April.....123
Lettuce, A New Way to Forward.....142
Liquid Manure Cistern.....*Illustrated*..137
Livery Stable Plans.....3 *Illustrations*..140
Machinery, Is it Profitable?.....139
Mangel, Webb's "New Kinver.".....*Illustrated*..137
Market Reports.....124
Orchard and Nursery in April.....123
Plants May Thrive on a Meat Diet.....131
Plants—Propagating by Leaves.....*Illustrated*..142
Plants, The Common Reed.....*Illustrated*..141
Poultry House.....4 *Illustrations*..136
Road Leveller.....*Illustrated*..136
Root Crops for Stock.....138
Science Applied to Farming, No. 40.—Plans for Experiments with Fertilizers.....130
Scoop for Measuring Feed.....*Illustrated*..138
Scoops for Sowing.....2 *Illustrations*..136
Shrubs, The Stuartias.....*Illustrated*..141
Stock—Gain of Weight.....135
Swine, The Black Dorset.....*Illustrated*..121
Talks on Farm Crops, No. 14.—Indian Corn Culture..135
Those Important Farm Experiments.....131
Window and Greenhouse Plants in April.....124

INDEX TO "BASKET," OR SHORTER ARTICLES.

Allanthus and Its Uses..127
Agl. Journal in Japan...128
Asbestos Paints.....126
Bean Culture.....129
Bean Planting.....153
Belted Cattle.....129
Boys and Girls.....128
Buckeye Mower.....128
Calcicake.....126
Calibre of Guns.....128
Catalogues of Dealers...129
Colorado Stock Men.....153
Cows Leaking.....153
Diuresis in Heifer.....129
Exports of Meat, etc....128
Facts About Florida.....129
Fish Interest.....125
Flax for Seed.....126
Fresh Manure on Potatoes.....129
Grass for Montana.....126
Ground Nuts.....129
Heebner's Horse Powers.127
Horticultural Societies..128
Hybridizing Plants.....126
Just a Mention.....127
Land in Grass.....129
Lice on Hogs.....129
Little Washer.....126
Lumps on Horse.....126
Microscope for Every Subscriber.....125
Mixed Feed.....153
Much Delay.....126
N. Y. Hort. Society.....128
Our World's Fair.....125
Oyster-Shell Lime.....153
Percheron and Normans..128
Percheron Horses.....129
Pip in Poultry.....129
Poland-China Record....128
Poplars & Cottonwoods..125
Potato Culture.....129
Pressure at Paris.....127
Protecting Seed.....128
Sale of Jerseys.....126
Schedules of Prizes.....128
Scurvy in Poultry.....129
Sending Papers.....126
Special Crops.....128
Stock for Dairy.....129
Sundry Humbugs.....126
Supplying Fertilizers....126
The Flower Garden.....128
Tonic for Pigs.....153
Vegetable Plants.....127

Calendar for April.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Moon rises.	N. Y. City, Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Moon rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Moon rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	M	5 42	6 26	5 6	5 48	6 25	5 6	5 44	6 23	5 6
2	T	5 41	6 27	sets	5 42	6 26	sets	5 43	6 24	sets
3	W	5 39	6 28	7 29	5 40	6 27	7 27	5 41	6 25	7 24
4	T	5 37	9 29	8 34	5 38	6 28	8 31	5 40	6 26	8 27
5	F	5 35	6 30	9 41	5 37	6 29	9 37	5 38	6 27	9 32
6	S	5 34	6 31	10 49	5 35	6 30	10 43	5 37	6 28	10 37
7	S	5 32	6 32	11 54	5 34	6 31	11 47	5 35	6 29	11 41
8	M	5 30	6 33	morn	5 32	6 32	morn	5 34	6 30	morn
9	T	5 29	6 33	0 53	5 30	6 33	0 46	5 32	6 31	0 39
10	W	5 27	6 36	1 43	5 29	6 34	1 37	5 31	6 32	1 31
11	T	5 25	6 37	2 25	5 27	6 35	2 20	5 29	6 33	2 15
12	F	5 24	6 38	2 59	5 26	6 36	2 55	5 28	6 34	2 51
13	S	5 22	6 39	3 28	5 24	6 37	3 25	5 26	6 35	3 23
14	S	5 20	6 40	3 54	5 22	6 38	3 53	5 25	6 36	3 51
15	M	5 19	6 41	4 18	5 21	6 39	4 19	5 23	6 37	4 19
16	T	5 17	6 42	rises	5 19	6 40	rises	5 22	6 38	rises
17	W	5 16	6 44	7 38	5 18	6 41	7 34	5 20	6 39	7 31
18	T	5 14	6 45	9 0	5 16	6 42	8 55	5 19	6 40	8 50
19	F	5 12	6 46	10 18	5 15	6 43	10 12	5 18	6 41	10 16
20	S	5 11	6 47	11 27	5 13	6 44	11 21	5 16	6 42	11 14
21	S	5 9	6 48	morn	5 12	6 45	morn	5 15	6 42	morn
22	M	5 8	6 49	0 24	5 11	6 46	0 18	5 13	6 43	0 11
23	T	5 6	6 50	1 10	5 9	6 47	1 3	5 12	6 44	0 57
24	W	5 5	6 51	1 44	5 8	6 48	1 38	5 11	6 45	1 33
25	T	5 3	6 52	2 11	5 6	6 49	2 7	5 9	6 46	2 3
26	F	5 2	6 54	2 33	5 5	6 51	2 31	5 7	6 47	2 28
27	S	5 0	6 55	2 53	5 4	6 52	2 51	5 6	6 48	2 50
28	S	4 59	6 56	3 11	5 2	6 53	3 11	5 5	6 49	3 11
29	M	4 58	6 57	3 30	5 1	6 54	3 31	5 4	6 50	3 31
30	T	4 56	6 58	3 51	5 0	6 55	3 52	5 3	6 51	3 54

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
New M'n	2	4 30 ev.	4 18 ev.	4 6 ev.	3 54 ev.	3 24 ev.
1st Quart	10	10 11 mo.	9 59 mo.	9 47 mo	9 35 mo.	9 5 mo.
Full M'n	17	1 13 mo.	1 1 mo.	0 49 mo	0 37 mo.	0 7 mo.
3d Quart.	24	3 49 mo.	3 37 mo.	3 25 mo	3 13 mo.	2 43 mo.

AMERICAN AGRICULTURIST.

NEW YORK, APRIL, 1878.

The active work of the year is now about to begin, over a large extent of country, and it may be well to consider a few plain and practical statements, and their bearing. Labor is the only source of wealth. Labor creates nothing; it only adds to already existing matter that quality of usefulness by which it is made to increase the general wealth. Wealth is simply the accumulation of the products of nature, and of our own industry—stored up for future use. Labor is set in operation by energy, and is guided by intelligence. An energetic man is industrious, and is tenacious of purpose. It is intelligence which enables us to make the most of our resources and to apply our labor most effectively. Unless energy is controled by intelligence, physical or bodily labor is wasted uselessly. Mental labor plans, invents, arranges, and directs bodily labor, and makes it productive in proportion to the accuracy of the reasoning which incites it. The bodily labor of one man, or that of thousands of men, may be set in operation or guided by the mental labor of one man. Mental labor is therefore more effective and more valuable than bodily labor, and its value is to be measured by the value it adds to bodily labor. The mental labor which invents a plow, a mowing machine, or produces a book, may be of immense benefit to a whole country, or even to the whole world, for it may serve to increase many times the results of the labor of millions of men. So the mental labor or intelligence of the man who uses a plow, or a harvester in the best manner, or who reads the book to the most profit, becomes worth to him many times more than his muscular force, because these may enable him to do many days' labor in one, without any physical weariness, and so add to his actual wealth and his comfort. Thus it is seen that the mind and the hand must unite together, to make the labor of each effective; and that the mind may enable the hand to very greatly increase its usefulness. Work on the farm deals with things that are hidden to the sight, and need to be clearly understood; and there is no other physical labor performed in the world that needs more to be guided by the labor of the mind, than the cultivation of the soil, the rearing of stock, and the conversion of field products into finished articles for sale, such, for instance, as meat, butter, cheese, milk, etc. The result of all this is, that a farmer should be a studious, thoughtful man, as well as an energetic industrious worker. He must also learn to stick to one thing; to persist in his chosen course; to be patient and persevering, and to strive to make his labor skillful and effective. With these qualities, there is no man surer of a reward for his labor, nor of better pay for the best quality of work.

Hints for Work.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every paper, from the latest experience and observations, by practical men in each department.*]

The Plow is already at work in thousands of fields, while a few are yet kept idle by a sodden soil. Caution should be used lest the plow be put to use too soon. No furrow should be turned while the soil is wet. When the mould-board is smeared, and does not brighten in the soil, or when the furrow is pasty and does not crack open and fall apart loosely, as it is turned over, the soil is too wet, and will be injured by plowing. Make haste slowly in plowing.

Make a Note of It.—A little note-book for the vest pocket may be made by folding a sheet of paper until it is about 2 inches long and 1 inch wide. Stitch this into a pasteboard cover, cut the edges, and keep the book in the vest pocket with a piece of lead pencil. Note down in this every thing that needs attention *as it occurs*, and in the evening, either dispose of it, or make a more permanent memorandum. Having practised this method for years, we can commend it as very useful.

Spring Wheat.—In spring wheat sections this is the first crop to be put into the ground. Where it will grow, it will succeed all the better for the best culture. Unless more than 10 bushels of grain per acre can be harvested, it is labor lost to grow this crop. It would be better to raise

Oats.—Last fall we sowed half an acre of Tennessee winter oats. At the present time they are alive, and although the leaves are yellow, the hearts are green. The greatest danger is now over, and as they have been exposed to a severe drouth, constant freezing and thawing, and a temperature of 6 degrees below zero, they may be considered as a safe crop in ordinary seasons. If they can be acclimated to stand our most severe winters, they will be very valuable, and will be widely sown hereafter. Spring oats should be sown rather thicker than has been usual. Three bushels per acre is better than 2½ if the ground is made rich enough, and

The Ground Should be Made Rich Enough to grow the largest possible crops; else we are laboring with our hands and not with our heads, and unprofitably. Now that we have the most useful artificial fertilizers, specially prepared for all crops, by honest and responsible dealers, there is no excuse for poor crops, unless the farmer is too poor to procure these fertilizers. In that case he should cultivate less land, and learn to grow the largest crops, by better work and more liberal fertilizing.

High Farming is simply making the most of our resources. It is simply putting our work where it will do the most good, and suffering no wastes to exist. It requires skill more than money, and good management rather than costly tools, fine stock, and showy buildings. It is not altogether in burying miles of tiles in the ground, but in bringing our fields under such a degree of cultivation, according to our means, as will produce crops with the greatest profit. The farmer who gains the most from the least outlay, is a "high farmer."

Roots.—No other crop is more profitable than a good root crop. Mangels and sugar-beets are the most valuable of these crops. For these the ground should be prepared this month. Full directions for their cultivation are given in an article elsewhere. An Improved Yellow Globe Mangel, and Lane's Imperial Sugar-beet, are the best kinds in cultivation. One of the most recent, and best approved Globe Mangels, is figured on page 137. A mixture of guano, superphosphate of lime, and potash salts, will make an excellent fertilizer for these crops. The seed should be procured now,

ready for sowing late this month, if the season is well forward, or early next month.

Potatoes.—While the potato beetle is about, most farmers will plant early potatoes. They are out of the way before the great army arrives. But we look for a great diminution of this pest if potato growers will fight them at all times for a year or two. The open winter may have destroyed a great many, but enough will remain. Yet we would plant potatoes. There is no more profitable crop when planted on good soil, and well cultivated. The Early Rose is still the best for the general crop; Early Vermont is very good, and yields well; Snowflake is an excellent variety; Early Ohio yields well, and Burbank promises to beat its parent, Early Rose. This is variety enough for early sorts. Read the account of True's planter given last month.

Cultivation of Wheat.—The Travis horse-hoe, invented by a Michigan farmer, has been found very serviceable in cultivating wheat sown in drills. In time, we shall cultivate wheat as we do corn, with surprising benefit, and Mr. Travis is the pioneer in this modern, but much needed improvement.

Top-dressing Sod for Corn.—We doubt if any better disposal of manure could be made at this season than to top-dress at once the sod to be plowed by and by for corn. It is easy to grow 100 bushels of corn to the acre if we set about it. Many farmers are doing it. It only needs 2 good ears to each hill 3 feet apart each way; that is all. Having a corn that yields four or five ears to a stalk, it is as easy to grow 100 bushels per acre of corn as 25 bushels of wheat, with the manure and cultivation.

There is no Danger in Growing Too Much.—Great Britain imports eight hundred million of dollars worth of food every year for her 30 millions of people. Her farmers only raise 40 per cent of the food consumed in the country; the rest is purchased from abroad. We can have the bulk of this trade if we want it. And besides this, our working population is increasing very fast. There is no danger of over production, if products are properly assorted. Farmers, miners, and artisans, in due proportion together, will not flood a country with unsalable products. Plentiful food is the basis of prosperity.

Meadows and Pastures need a little stimulating fertilizer. A dressing of 200 pounds per acre of bone-flour, superphosphate, or guano, often doubles the yield. Nitrate of soda (150 pounds per acre) gives a rank growth, but the hay is not so nutritious as that from the phosphatic manures. Improved meadows mean more milk, cheese, butter, and beef. Along with the fertilizer, a scattering of fresh seed, timothy, blue-grass, red-top, and clover, mixed; and a good harrowing will be beneficial. All this may be done this month.

Horses.—A regular allowance of grain will now be needed by working teams. It is economical to feed ground grain. Ten quarts a day is a full allowance for a hard-worked horse. A pailful of moistened cut hay, with 3½ quarts of ground feed mixed with it, is the usual quantity fed to each of our horses. This feed is not too bulky, and when given nearly dry, has not the injurious effect on the wind of wet soft feed. The best feed is equal parts of corn, rye, or oats, and wheat-bran.

Cows.—In-coming cows should be treated with caution. Good hay is sufficient food for the month previous to calving. Watch the udder closely, and on the first appearance of heat and hardness, bathe it with cold water to reduce the inflammation, and insert a silver milking tube into each teat to draw off the milk as it may be secreted. In case garget has occurred previously, give 20 grains of iodide of potassium in a drink of water, and rub the udder with a mixture of 7 drams of glycerine and 1 dram of iodide of potassium. It is well to let the calf suck the cow if there is any trouble with the udder.

Calves.—By raising the heifers of our best cows, the stock will be improved. Every farmer should aim to keep only the best. A cow yielding only 8 quarts of milk a day does not pay for the feed, and should be replaced with a better one. We must look upon our live-stock as machines, kept for a purpose, and discard unprofitable animals.

Sheep.—As the days become warmer, ticks will increase, and sheep will appear restless under their winter blankets. Give them shade on the cool side of a building, or put up a temporary shed in the field where they may escape the hot sun of noonday. As the sheep begin to nibble the new grass, look out for scours in the lambs. If this appears, give a tablespoonful of a mixture of peppermint water with prepared chalk, and a little ginger. For the ticks, see hints last month.

Pigs need clean dry pens, and supply breeding sows with cut straw, chaff, or sawdust, for litter.

Oxen, when at work under a hot spring sun, will suffer from the heat. Give them frequent resting spells, and water, with some bran stirred into it.

Manure should be turned over early in the month, so as to have it rotted as much as possible for use in hill or drill crops. Those who have heeded our advice, to cut all the straw and stalks, either for fodder or litter, will find the handling of the manure heap an easy task. Those who have not, will probably regret the failure, and resolve to do better.

Poultry.—Many hens will now have laid out their litter, and become broody. Give sitting-hens clean nests of soft hay, and do not set a hen that is infested with vermin. Put such a one in a close coop lined with tarred roofing-felt, and apply grease to her legs and under the wings. Houses may be kept free from vermin by cleanliness, and using grease and kerosene oil on the perches.

Sundry Matters.—Haul out a liberal allowance of the best manure to the garden, with a load of good cow-manure for the flower beds. The satisfaction will come when the effects are seen. Raise the earth around the well, or cistern, to turn off surface water. Observe the strictest cleanliness in the stables and yards. Make channels for waste water. Raise the centers of roads and foot paths, to keep them dry, before the hurry comes on. If seeds of all kinds have not been procured, do this without delay. Be cautious in trying new kinds, and never risk the main crop in uncertainties.

Notes on Orchard and Garden Work.

There is rarely a season that is not regarded, for one reason or another, as "remarkable," yet a consultation of the records for a few years back, will show that the same "remarkable" seasons are not of so rare occurrence. Still we can not recollect when we have before had, near New York, bluebirds abundant at the end of February, followed in early March by other birds, in such numbers as to indicate that, in their opinion at least, we have an early spring. If the present indications (March 12th) continue, there will be a rushing time with all spring work. Those who act upon the principle of doing work whenever it can be done, are less likely to be crowded, than those who put off spring work, because it is not spring by the Almanac. The Notes for the past two months should be consulted, and all preparatory work hurried up.

Orchard and Nursery.

The Planting Season, if this weather continues, will be short, and the work must be pressed. There is little to add to last month's Notes.

Trees from the Nursery, if transported a long distance, may be injured in warm weather, in two ways. 1st. They may be dried out. This will be shown by the shrivelling of the bark on the twigs. For trees in this condition, open a trench in light, mellow soil, large enough to contain them, root and branch. Then, first seeing that the labels are all right, bury them entirely in moist, but not wet, soil, putting a stake at the roots as a guide in taking them out. Let them remain buried five days or a week, and, when taken out, they will be found perfectly restored. Another danger is, 2d, from

Overheating in Box or Bundle, causing the buds to push. We have received trees, long on the journey, the shoots of which had pushed two or three inches. It will be found that it is always the upper buds on the branches which start first, and the only remedy is to cut every branch back to a dormant bud—one that has not started—no matter if it leaves the tree a mere stick with stubs upon it. This is severe treatment, but is the safest.

What Varieties to Plant, is a question often asked of us, and is one of the most difficult to answer. If the fruit is for home use, a succession from the earliest to the latest, will be needed. If fruit is to be grown for market, then it is necessary to know what the market requires. In all these cases, the fruit-growers in the neighborhood can give better advice than any one else, and we have never yet met a successful fruit-grower who was not willing to tell what he knew for the benefit of others. It is only quacks who have secrets. A recent request came from Central Massachusetts for us to name

Six Pear Trees that he could plant for profit. We named several, the fruit of which he might profitably dispose of in Boston at a good price, which could only be sold in New York as "cooking fruit." This merely shows that one should consult the tastes of his market in selecting varieties.

The Home Nursery.—Those who propose, in a year or two, to set out orchards, can well prepare for it now. They can buy from the nurseries root-grafts, or nursery stocks "in bud," *i. e.*, stocks budded last year, on which the buds have "taken," and which will start into growth this year, from which the stock *above* the bud, must, of course, be cut back. These, the very beginnings of trees, can be bought very cheaply, and if set 18 to 24 inches apart in rows wide enough apart to be well cultivated, will, at the end of two years, give excellent young trees to set in the orchard, at a small cost.

Grafting Old Trees, to convert valueless kinds into better ones, should be done just when the buds swell. We can not repeat the directions for this every year. Grafting was described in full, with engravings, and made so simple that any intelligent boy can do it, in the *American Agriculturist* for April, 1877, which may be had, by mail, for 15 cents.

Books on Fruit Culture.—Every one who has an orchard, should have at least one book on fruit culture. A list of the leading works was given in these Notes in January last.

Insects.—Where the "Canker-worm" is troublesome, look to the barriers to prevent its ascent, and renew the tar or printer's ink upon the bands. Dead insects will often make a bridge over which the living may cross; a daily inspection is needed.

Fruit Garden.

Last Month's Notes, in a great measure, indicate the principal work for this month, and as that will be planting, it can not be pushed forward too early. Early planting is desirable for every kind of fruit. In northern localities the

Winter Covering of strawberries and the tender kinds of raspberries will remain until the present month. Lift the raspberries, and tie them to the stakes or trellis, when all danger of severe frost is over, and open the straw, or hay, on the strawberry beds, over each plant, to expose it freely.

Gooseberries and Currants should have been procured last fall, or early this spring, but it may be done now if the plants have not started into growth.

Grapes.—The Notes of last month, together with the article on page 144, should induce those who have no vines to plant them, and will serve as a guide as to what, where, and how to plant.

Kitchen and Market Garden.

In all, except the most northern localities, the cold-frame plants will be set out, and the sashes which have covered them during the winter, will be doing service on other frames, in forwarding lettuce, radishes, etc.

Hot-Beds and Cold-Frames, in which seeds have been sown, will need increased care, as the sun gets warmer. Last month we indicated what this care is—abundant ventilation during the day, early closing of the frames, and covering in cool nights.

Early Sowing does not mean the same thing in Canada that it does in Georgia, yet there are in both localities certain things that may be sown first.

The Earliest Sowings, everywhere, are of Beet,

Parsnip, Early Turnip, Spinach, Radish, Peas, Leek, Onion, Parsley, and Cress. These should be sown first so soon as the soil can be worked, and all are to be sown where they are to grow, though Parsley and Leeks may be transplanted if desired.

Seed-Beds of Cabbages and other things to be transplanted, if not under glass, or in window-boxes in the house, as heretofore advised, may be made in a sheltered sunny place in the open ground.

Early Potatoes, to be early, must be planted at once, and if the soil is light and warm, no matter if a frost nips the tops, they will start from below.

Succession Crops.—Where the season has allowed of early sowing of Beets, Peas, Radishes, Spinach, and other early vegetables, succession crops should be put in every two weeks or so, until hot weather is likely to prevent their healthful growth—and this should be kept in mind all through the season.

Asparagus.—If new beds are to be made, get one-year-old plants, and give them all the room that can be afforded. The old directions for a family garden were, to put the plants 12 by 18 inches. This will do if no more space can be afforded, but market-growers find that the wider the space, the better the crop. Some who grow for markets, set the plants as wide apart as 6 ft. by 4 ft., and find this the most profitable for field culture. This would, of course, be impracticable in a family garden, where 2 x 2 feet will be wide enough. The old practice of manuring a bed to last for years is not now followed. The plants at setting should have a good supply of manure, and then an annual dressing afterwards. Asparagus should not be cut until the third year after setting.

Sweet Potatoes should be started about six weeks before they can be safely set out, which is, in the latitude of New York, about June 1st. This is a sub-tropical plant, and nothing is gained by putting it in the open ground until that is well warmed. In southern localities, the potatoes are "bedded out"—a pit is dug in a sheltered place, manure put in, and some soil placed over it. The potatoes are laid in, and, if large, cut lengthwise, and covered with about two inches of rich soil; the bed must be covered at night, and on cool days, with boards. In the Northern States, the potatoes are started in a hot-bed.

Odds and Ends.—Procure all the seeds you are likely to need, early....Read over Notes for the last two months....If you have no seed-drill, get one of some kind—it will pay for itself in one season, even with a small garden....Read Prof. Atwater's articles on fertilizers, in former months, as they apply to the garden as well as to the field. Try new varieties, all that you can afford, but do not give up standard sorts for novelties, however highly praised. Try new things, but go slow.

Flower Garden and Lawn.

The title really should be "The Lawn and Flower Garden," as in many cases the lawn is the first consideration; the lawn is the ground-work upon which the flower-beds, be they simple or elaborate, are to be displayed.

In making a Lawn, it must be borne in mind that the work is to last for years, and that the soil must be as well prepared for the grass as if for the choicest plants. Draining, if needed, is the first necessity; to this must follow, abundant manuring, deep plowing, harrowing, and rolling. If the rolling discovers any weak spots, these must be filled in. The next question will be

Sods or Seeds?—If the lawn is not too large, and good pasture, or road-side turf, is to be readily obtained, it is better to use it; but,

In Turfing, it must be borne in mind, that to make a successful lawn, the soil is to be as well prepared as for sowing seeds. The turf should be of the best kind, and free from all weeds; and when laid, should be well pounded down. If any soft spots are found, they should be made solid.

In Seeding a Lawn, it is very desirable to lay all the margins along roads and paths, as well as the margins of flower-beds, with turf. Sow early, and, to insure an even cast, divide the seed into three or four parts, and sow in as many different directions. For kinds, see last month. Use the roller freely, and notice, mend, and re-sow all soft spots.

Sowing Grain with Grass, which is often advised, is not needed unless the lawn is sown very late.

Planting of shrubs and trees can not be done now, too soon. The planting of ornamental beds, usually done with tropical and sub-tropical plants, should be deferred until the ground is well warmed.

Ornamental Beds.—Experience has shown that European examples have little value for us, and that for ornamental work we must depend upon foliage, rather than upon flowers; and we may employ, for effect, plants with colored foliage, and those with broad leaves, like the Cannas and other similar plants, generally classed as sub-tropical.

Coleuses and Alternantheras.—Plants of this kind of course require a greenhouse to provide a stock. Those who have not such facilities, can produce ornamental effects later in the season with

Annuals.—Thus, some of the ornamental varieties of *Ricinus*, or Castor Oil Plant, are very effective; another very showy annual, judiciously used, is *Euphorbia marginata*. Then there are the different

Celosias.—Indeed, a consultation of the seed catalogues of the leading houses, will suggest various other annuals that may be used with good effect.

Hardy Perennial Plants should not be overlooked, as excellent bedding effects may be produced with these. We last year described a bed filled with the White *Anemone Japonica*, bordered with *Sedum spectabile*. Other combinations may be made.

Spring Bulbs, such as Gladiolus, Tiger Flower, and others, are to be put in as soon as the weather becomes settled. It is well to make two or three plantings for a succession.

Greenhouse and Window Plants.

Shade will soon be needed for plants under glass; this is best done by white-wash—ordinary lime wash, such as is used upon plastered walls. To make a gradual shade, this is flirted from the brush in drops, sprinkling the glass thinly at first, and increasing the spattering as the sun gets hotter.

Shade for Window Plants must be provided in a different manner; usually a screen of common cotton cloth, such as would be needed, were there no plants at the window, will be sufficient.

Hardening-off will be necessary with all plants, whether in the window or greenhouse. This is accomplished, in either case, by free admission of air, whenever the outside temperature will allow.

Stripping the Greenhouse, and placing all the plants outside, is not now so much practised as formerly, as it is very easy to keep the house in an attractive condition not only by the use of the summer-blooming greenhouse plants, such as Gesnerias, and those of that family, but by the use of such showy annuals as the Balsams. Whoever has not seen the Balsams carefully grown in pots, can have no idea of the beauty that this flower is capable of. The same may be said of some other annuals.

Plants to go into the Border, such as Geraniums, will get too large by fall to be taken in again, and it is well to propagate others from cuttings early in the season to decorate the house next winter.

Bulbs.—The last of the Hyacinths, and other bulbs, will now be in flower. As soon as the flowers fade, turn out the bulbs, if the ground is open, in some spare corner, and they will in time resuscitate.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions *for the month ending March 12th, 1878*, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.* bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
23 d's *this* m'th	343,000	3,804,000	1,516,000	91,500	569,000	403,000
27 d's *last* m'th	331,000	3,611,000	1,731,000	67,000	504,000	537,000

SALES.	*Flour.* bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
23 d's *this* m'th	339,000	3,912,000	3,238,000	243,000	551,000	526,000
27 d's *last* m'th	351,000	3,976,000	2,871,000	203,000	476,000	581,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.* bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
23 days 1878	343,000	3,804,000	1,516,000	91,000	569,000	403,000
23 days 1877	320,000	265,000	1,401,000	69,000	194,000	613,000

SALES.	*Flour.* bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
23 days 1878	339,000	3,912,000	2,238,000	243,000	551,000	526,000
23 days 1877	227,000	634,000	1,951,000	98,000	246,000	771,000

3. *Exports from New York, Jan. 1, to Mar. 10.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1878	475,400	7,483,409	2,776,280	339,829	621,299	37,847	55,550
1877	234,958	1,576,339	2,038,553	164,389	95,457	20,338	124,357
1876	357,775	1,910,068	2,630,925	15,387	——	46,366	198,153

4. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Mar. 11, 1878	1,639,371	420,484	114,200	660,145	1,090,897	425,595
Feb. 11, 1878	1,674,035	774,470	206,816	831,673	1,415,633	318,070
Jan. 10, 1878	2,586,715	105,909	286,333	913,898	1,687,985	331,474
Dec. 10, 1877	2,344,982	1,723,229	399,077	864,787	1,879,052	338,849
Nov. 5, 1877	981,374	2,643,502	166,949	668,429	1,750,739	328,383
May 7, 1877	761,686	468,809	193,046	174,375	347,831	291,634
Feb. 7, 1877	3,083,819	2,302,261	374,142	671,114	956,114	388,605
Jan. 8, 1877	3,668,010	3,077,504	341,750	905,615	1,086,104	425,408
Dec. 11, 1876	3,110,283	3,385,554	218,841	873,310	1,182,322	512,041
Apr. 10, 1876	3,393,074	232,140	68,429	200,881	706,282	436,942
Jan. 10, 1876	5,802,293	663,982	100,711	325,191	1,080,300	307,438

CURRENT WHOLESALE PRICES.

	Feb. 12.	Mar. 12.
PRICE OF GOLD	101 7-8	100 3-4
FLOUR—Super to Extra State ₱ bbl	$4 00 @ 5 75	$4 10 @ 5 50
Super to Extra Southern	4 00 @ 8 00	4 10 @ 7 75
Extra Western	4 85 @ 9 00	4 75 @ 8 50
Extra Genesee	5 25 @ 6 50	4 75 @ 6 25
Superfine Western	3 85 @ 4 75	4 10 @ 4 65
RYE FLOUR	3 00 @ 4 00	3 90 @ 3 90
CORN-MEAL	2 70 @ 3 10	2 50 @ 3 10
BUCKWHEAT FLOUR, ₱ 100 lbs	1 25 @ 2 00	1 25 @ 1 85
BUCKWHEAT, per bush	55 @ 58	Nominal.
WHEAT—All kinds of White	1 38 @ 1 44	1 33 @ 1 41
All kinds of Red and Amber	1 00 @ 1 40	1 00 @ 1 36¼
CORN—Yellow	50 @ 60	52 @ 58
Mixed	44 @ 59½	47 @ 60
White	54 @ 60	52 @ 61
OATS—Western	33 @ 41½	33 @ 40
State	33 @ 41½	35 @ 41
RYE	68 @ 75	70 @ 76
BARLEY	60 @ 1 00	48 @ 95
BARLEY MALT	65 @ 1 20	60 @ 1 20
HAY—Bale, ₱ 100 lbs	40 @ 85	40 @ 85
STRAW, ₱ 100 lbs	40 @ 65	35 @ 65
COTTON—Middlings, ₱ lb	11 @ 11¾	11 @ 11⅝
HOPS—Crop of 1877, ₱ lb	5 @ 13	5 @ 13
" old, ₱ lb	1 @ 5	1 @ 5
FEATHERS—Live Geese, ₱ lb	45 @ 50	35 @ 47½
SEED—Clover, West. & St'n ₱ lb	7¾@ 8¾	8 @ 8¾
Timothy, ₱ bushel	1 35 @ 1 40	1 25 @ 1 40
Flax, ₱ bushel	1 55 @ —	1 45 @ 1 50
SUGAR—Ref'g & Grocery ₱ lb	6¾@ 8¾	6¾@ 8¾
MOLASSES, Cuba, ₱ gal	30 @ 36	20 @ 35
New Orleans, ₱ gal	25 @ 49	22 @ 48
COFFEE—Rio (Gold)	15 @ 18¾	14 @ 17¼
TOBACCO, Kentucky, &c., ₱ lb	4 @ 15	4 @ 15
Seed Leaf, ₱ lb	4 @ 50	4 @ 50
WOOL—Domestic Fleece, ₱ lb	28 @ 52	25 @ 52
Domestic, pulled, ₱ lb	20 @ 40	28 @ 40
California, spring clip	18 @ 32	18 @ 28
California fall clip	10 @ 28	12 @ 20
TALLOW, ₱ lb	7½@ 7¾	7½@ 7¾
OIL-CAKE, ₱ ton	30 00 @31 00	30 00 @31 00
PORK—Mess, ₱ barrel	11 25 @11 75	10 00 @10 25
Extra Prime, ₱ barrel	9 00 @ —	Nominal.
BEEF—Extra mess	12 50 @13 00	12 00 @12 50
LARD, in trcs. & bbls, ₱ 100 lb	7 12½@ 8 10	7 25 @ 7 65
BUTTER—State, ₱ lb	12 @ 37	10 @ 36
Western, poor to fancy, ₱ lb	10 @ 40	10 @ 33
CHEESE	5 @ 13¾	5 @ 14
EGGS—Fresh, ₱ dozen	12 @ 18	10 @ 15½
POULTRY—Fowls & Chickens	8 @ 15	7 @ 14
Turkeys—₱ lb	6 @ 15	5 @ 14
Geese, ₱ pair	1 00 @ 1 75	1 00 @ 2 00
Ducks, ₱ pair	55 @ 90	60 @ 1 00
Roosters, ₱ lb	5 @ 6	5 @ 6
DUCKS, Wild, ₱ pair	25 @ 2 00	30 @ 2 25
GROUSE, ₱ pair	75 @ 1 25	75 @ 1 50
PIGEONS, wild, West'n, ₱ doz	— @ —	1 00 @ 2 00
QUAIL, ₱ dozen	1 00 @ 2 00	1 50 @ 2 75
RABBITS, ₱ pair	30 @ 35	20 @ 25
HARES, ₱ pair	30 @ 35	20 @ 25
TURNIPS ₱ bbl	75 @ 1 00	50 @ 1 00
CABBAGES—₱ 100	3 00 @ 4 00	2 00 @ 4 50
" Red	2 50 @ 4 00	2 00 @ 4 50
ONIONS—new, ₱ bbl	1 25 @ 1 75	1 12½@ 1 87½
CARROTS, ₱ bbl	75 @ 1 00	75 @ 1 00
POTATOES, Bermuda, ₱ bbl	6 00 @ 7 00	4 50 @ 5 00
POTATOES—₱ bbl	1 25 @ 2 00	1 25 @ 1 87½
SWEET POTATOES—₱ bbl	1 50 @ 2 50	1 25 @ 2 50
BEETS, ₱ bbl	50 @ 75	60 @ 75
" Bermuda, ₱ crate	— @ —	75 @ 1 00
PEAS—Canada, in bond, ₱ bu	— @ 83	82 @ 83
" green, ₱ bush	1 30 @ —	1 15 @ 1 25
BEANS—₱ bushel	1 50 @ 2 60	1 45 @ 2 50
BROOM-CORN	4 @ 7½	4 @ 7½
SPINACH, ₱ bbl	— @ —	1 50 @ 2 50
KALE, ₱ bbl	— @ —	1 00 @ 1 25
TOMATOES, Bermuda, ₱ box	1 50 @ —	75 @ 1 00
APPLES—₱ barrel	2 75 @ 5 00	3 00 @ 5 50
PEANUTS, domestic, ₱ bush	— @ —	1 00 @ 1 45
GRAPES, ₱ lb	2 @ 7	— @ —
CRANBERRIES—₱ bbl	5 00 @ 7 00	7 00 @ 9 00
" ₱ crate	1 00 @ 1 25	1 25 @ 2 50
ORANGES, Florida, ₱ bbl	2 75 @ 5 50	3 50 @ 5 50

Gold has been up to 102¼, and down to 100¾, closing March 12, at 100¾, (or nearly down to par), as against 101⅞ on Feb. 12; 102⅝ on January 12; 103 on December 12; 102⅝ on Nov. 12; 103 on October 12; 105⅜ on July 12; 104⅞ on June 12; 107¼ on May 12; 104⅝ on March 12, of last year....Though the receipts and sales of Breadstuffs, during the month, have been to a comparatively liberal aggregate, the course of the market has been far from satisfactory to sellers, who have been compelled to make further important concessions to buyers, especially toward the close, with a view to placing supplies promptly. Advices from Europe continue against the export interest, and serve to depress values. Flour and Barley close heavily and irregularly, on a tame movement. Wheat and Corn leave off irregularly. Of the purchases, on export account, were large quantities of Wheat for French, German, and other Continental markets; and of Rye, chiefly for Germany. Operations in Barley were much less extensive, as well for shipment, as for home use. Some revival of export demand has been noted for Oats....In the line of Provisions, the feature has been

the increased depression, which, in the instance of hog products, was extreme and embarrassing to many operators, influenced mainly by the discouraging reports from the Chicago market, where the enormous receipts told decidedly against the interests of sellers. At the materially reduced figures, extensive transactions were noted, particularly in Lard and Bacon, in good part for export. Butter, Cheese, and Eggs, closed generally weak as to price, on a restricted business....Hops have been fairly active, mostly for shipment, at about former rates. ....Wool has been very moderately sought after, and at the close quoted easier and irregular, on freer offerings. ....Tobacco has been in comparatively slack demand, yet has varied little as to values....A much livelier home and export inquiry has been noted for Clover Seed, which advanced sharply, closing strong; a better demand also for Timothy, which left off more firmly. Other Seeds inactive and unsettled....Hay and straw have been in moderate demand within the previous range....Ocean freights have been fairly active, but at a further material declining in rates, leaving off heavily. ..Grain rates by steam to Liverpool closed March 12th at 7*d.*; to Glasgow, 8½@9*d.*; to London, 7¼*d.*; to Bristol, 8@ 8½*d.*; to Hull, 9@9¼*d.*; to the Continent, 8½@9¼*d.*; to Liverpool, by sail, 6¾@7*d.*; London, by sail, 7@ 7¼*d.*, ₱ bush. Flour to Liverpool, by steam, 3*s.*@3*s.* 3*d.*, and by sail at 2*s.* 1¾*d.*; London, by sail, 2*s.* 1¾d., and by steam, 3*s.* 3*d.*; Bristol, by steam, 3*s.* 3*d.*, and sail, 2*s.*@ 2*s.* 3*d.* per bbl. Provisions by steam to Liverpool, 30*s.*@ 37*s.* 6*d.* per ton. Cotton by sail $^{7}/_{32}$@¼*d.*, and steam at $^{7}/_{32}$@¼d. ₱ ℔. Grain, by sail, for Cork and orders, at 5*s.* 6*d.*, and to Continental ports, 5*s.* 6*d.*@6*s.*; Italian ports, 5*s.* 3*d.*@5*s.* 7½*d.* per quarter; to Lisbon, in ship's bags, 15¾ cts. per bushel, and from Philadelphia, in shippers' bags, 15@15½ cts. per bushel.

New York Live-Stock Markets.

WEEK ENDING	RECEIPTS. Beeves.	Cows.	Calves.	Sheep.	Swine.
Feb. 18	10,525	90	826	21,747	37,350
Feb. 25	9,433	88	783	23,862	36,509
Mar. 4	9,483	152	958	21,273	35,952
Mar. 11	6,801	197	1,044	19,836	29,563
Total for 4 Weeks	36,242	527	3,611	86,718	139,674
do. *for prev. 4 Weeks*	35,566	440	3,361	86,279	143,786

	Beeves.	Cows.	Calves.	Sheep.	Swine.
Average per Week	9,060	132	903	21,679	34,918
do. do. *last Month*	8,891	110	840	21,570	35,946
do. do. *prev's Month*	8,410	77	954	21,201	38,935

The prices for the past four weeks were as follows:

WEEK ENDING	Range.	Large Sales.	Aver.
Feb. 18	7¾@11½c.	8¾@10 c.	9¼c.
Feb. 25	7½@11 c.	8½@ 9¼c.	9 c.
Mar. 4	7 @10¾c.	8¼@ 9¼c.	8¾c.
Mar. 11	7 @10¾c.	8¼@ 9¼c.	8¾c.

Beeves.—The market has been weak and declining steadily through the month, as may be seen by our quotations. The shipment of 1,000 head the first week, only helped to arrest the decline temporarily, and various causes, which could not be overcome, finally weighed down the market, and resulted in reducing it to the lowest condition known for many years. Exporters have operated largely at the decline, and this safety valve of the foreign shipments has done much to strengthen the market. The final recovery and hopeful outlook for the future which marked the close was due to this cause alone. The highest price of the closing business was 10¾c. ₱ ℔ for 56-℔ extra cattle; the lowest was 7c. for some common natives of 55 ℔ to the cwt. City dressed beef sold for 6c. to 8c. ₱ ℔. One of the beaviest steers ever sold in this market came from Long Island, dressing 1,925 ℔s., netting 8¼c. ₱ ℔, or $163 for the carcass... **Cows.**—A limited demand has made a dull market for cows, and prices are lower. Very few cows reach to $70 per head, the bulk of the sales for good ones being about $60. Ordinary have sold for $45, and poor as low as $35. ...**Calves.**—For good veals the market has been steady, closing at 6c.@7¼c. ₱ ℔., live weight. Half-fed sold at 4c.@6c. ₱ ℔ alive. Hog-dressed are not plenty, but a quiet market held them down to 8@9c. ₱ ℔ for the best, 6@8c. ₱ ℔ for good, and 5c. for poor ones.. **Sheep and Lambs.**—After a dull market, enlivened by only one spurt, when receipts happened to be light, the closing business was somewhat better, but not enough to advance prices. The closing prices were $5.20@$6.50 per head for sheep, $5@$5.75 for ewes, and 6@7¼c. ₱ ℔ for lambs. City-dressed mutton sold at 6½@8¾c. ₱ ℔ for fair to prime....**Swine.**—Prices have fallen to a lower point than at any time since 1860 for dressed pork; 4¼@ 4¾c. ₱ ℔ is probably the lowest mark that will be made this season, and this point was reached at the close. Live hogs were quotable at 3¾@4c. ₱ ℔, with no buyers for them. Jersey-dressed pigs sold for 4½@5½c. ₱ ℔.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per ℔	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ₱ ton	$56.50
do. do. Lobos, do. do. do	47.50
do. do. guaranteed, ₱ ton, cargo F	56.00
do do. rectified, per ton, 9.70 p. c.	60.00
do. do. do. do. 8.40 p. c.	51.00
Soluble Pacific Guano, ₱ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone	55.00
Mapes' Complete Manure (Ville formula) p. 1,000 lbs	26.14
do. Spring Wheat Manure, ₱ 1,000 ℔s.,	25.00
do. Fruit and Vine Manure, do.	17.50
do. Bone, strictly pure, meal ....per ton.	42.00
do. do. do. extra fine.... do.	40.00
do. do. do. fine..... do.	38.00
do. do. do. medium..... do.	36.00
do. Lawn Top Dressing..... do.	60.00
do. Potato Manure, (Ville Formula).. do.	51.94
Stockbridge Corn Manure, per acre	20.00
" Potato do do	10.00
" Tobacco do do	50.00
" Rye do do	10.00
" Wheat do do	15.00
Bowker's Hill and Drill Fertilizer, per ton	45.00
Sulphate of Magnesia (55 to 60 per cent), per ton.	22.50
Gypsum, Nova Scotia, ground, per ton	8.00
Nitrate of Potash (95 per cent.), per lb.	9¼c.
Sulphate of Potash (actual potash 44 per cent) per lb	4 c.
do. do. (actual potash 27½ per cent) per lb	2 c.
German Potash Salts (actual potash 12 to 15 p. c. p. ton	$18.00
Muriate of Potash (actual potash 50 per cent), per lb	2½c.
Nitrate of Soda, per lb	4¼c.@ 4¼c.
Sulphate of Ammonia (25 per cent.), per lb	4¾c.@ 5¼c.
Dried Blood or Dried Meat (ammonia 14 per cent) p. ton	$55

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

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The German American Agriculturist is receiving large subscriptions from every quarter, indicating that the additions and improvements made in it are being recognized and appreciated. It is the only purely German Agricultural paper in the United States, and we intend, with the assistance of our English readers, to at least double its circulation during the present year. Please make known to your German neighbors the merits of the English *Agriculturist*, and that they can for the same price have the German edition, which contains all the engravings and valuable articles of the English edition, with the addition of a valuable Special Department, edited by the Hon. Fred. Münch.

A Microscope for Every Subscriber.—Every subscriber to the *American Agriculturist* for 1878, is entitled to receive *one* of the *American Agriculturist* Microscopes, delivered free anywhere in the United States or Territories, on remitting 60 cents; or for 40 cents if the Microscope be taken *at* the office. The invariable price to non-subscribers is $1.50, or $1.65 if sent pre-paid. At $1.65, it is far cheaper than any microscope of equal usefulness that was ever before offered. By new methods, and by making them on a scale twenty times greater than ever before attempted, the cost has been greatly reduced. These special advantages are reserved exclusively for the subscribers of this Journal for the present year; and by paying part of the cost themselves, the Publishers supply them at the nominal price above named. Continued testimonials are daily received of their high value, from the best Judges. Since our last issue, they have, after examination, been adopted by several classes in Botany and Natural History in Colleges and Seminaries—the members of the classes taking the Microscope and the *Am. Agriculturist*. The Microscopic articles in this Journal, the present year, will be worth much more than the cost of both paper and Microscope.

Any Family Desiring a Temporary or Permanent Residence, with special advantages for Education, Good Society, etc., will be interested in an advertisement on page 160.

The American Agriculturist of April 1st, contains its usual 50 engravings, illustrating animals, plants, buildings, labor-saving contrivances, etc.; Work for the Month laid out in detail with practical suggestions; extended Humbug exposures; a $1,000 House; Livery Stable and Carriage-House plans; Among the Farmers, by One of them; Farm Crop Talks, No. 14; Goat-Raising for Profit; Root and Fodder Crops; Gardening Chapters; Plant One Grape Vine; Sundry Farm appliances, illustrated; Many House Hints; Boys and Girls' Columns; Using the Microscope, with interesting illustrations; and a great variety of condensed useful articles and items. Price 15 cents; $1.60 a year. ORANGE JUDD COMPANY, Publishers, New York.

Editors desiring to learn, for their own future information, the scope and object of the important series of experiments being carried on the present year, will find the matter succinctly stated on page 131, second column.—No better scheme has ever been devised for obtaining valuable information, than this one of Prof. Atwater. It is wholly *pro bono publico*, with no opportunity for speculation by anybody, and no gain to the promotors of the enterprise, unless it be the credit that may come from originating and carrying out a project that promises to be so valuable in its ultimate results for farmers themselves.

Poplars and Cottonwoods are so common, that one would suppose that botanists knew all about them. Prof. Serono Watson, of Cambridge, Mass., in writing up the genus in a recent article for the "Am. Journal of Science and Arts," found the materials in the principal herbaria remarkably meagre — our common species, even in the greatest of our collections, the Gray Herbarium at Harvard College being imperfectly represented. Prof. Watson asks for specimens of the genus *Populus*, including all known as Poplars and Cottonwoods, from all parts of the country. He says: "Specimens may be sent by mail, fresh from the tree, without the trouble of pressing, or drying, by wrapping them in an ordinary newspaper." Although he does not mention it, let us beg on his behalf that senders forward a Postal Card, announcing the specimens, by the same mail, and give any notes about the trees that may be of interest. Address to "Prof. Sereno Watson, Botanic Garden, Cambridge, Mass."

Importance of the Fish Interest.—A comparatively few individuals are enthusiastically engaged in trying to awaken public interest in the value of our fish interest. They claim, and justly, that our inland waters may, at comparatively little expense, be made to yield many millions of dollar's worth of excellent food. By persistent effort they get, now and then, from State Legislatures and Congress, appropriations of a few hundreds of dollars, which ought to be as many thousands, to develope this interest.—At the Convention of the American Fish Cultural Association, held in New York City during the last days of February, Mr. G. Brown Goode, of the Smithsonian Institution, who is thoroughly acquainted with this subject, gave the following statistics of the present consumption of fish in the United States: codfish, 214,322,000 lbs., value $4,825,540. 1,500 vessels are engaged in this trade in the United States. Our whale fisheries yield $2,841,000 annually. Of salmon, 30,000,000 lbs. are canned on the Columbia River of Oregon alone. Of mackerel, 49,000,000 are caught annually, and of menhaden 463,000,000 lbs., used chiefly for oil and fertilizers. In 1876, there were caught in the U. S., **1,294,038,000** lbs. of fish of all kinds, valued

at $75,278,281. Of oysters, 4,000,000,000, valued at $50,000,000. (This equals 100 oysters for every man, woman, and child, in the country.)

Sending Papers.—We again ask our friends who send us papers containing articles they wish us to see, to mark the articles by pencil or ink line (blue pencil is best), so distinct that it will readily catch the eye. The clerk who opens the paper mail can not possibly read, even the headings, of the articles in the hundreds of papers that come daily. Also notify us by letter or postal, by the same mail, of the sending of the paper. We now and then get a card—like the one at hand—saying: "I sent you last week a copy of," etc. The paper, not being marked, is no doubt on its way to the paper-mill, to be ground over. The Post-office rulings allow an article to be marked by a line, to call attention, but, of course, there must be no writing.

Much Delay and Disappointment result from mixing editorial and business matters in the same letter. A letter on business, of course, goes first to the business department to which it belongs, whether it relates to matters concerning the paper or to the book business. When those having charge of such matters have done with the letter, it is passed over to the editors. It may, and often does, happen, that a question for the editors, in this way, often loses a whole month, through the delay of a day or two thus caused. This may be avoided by putting the editorial and the business matters on separate sheets in the same envelope.

Supplying Experimental Fertilizers.—In proposing the Farm Experiments, described last month, and elsewhere in the present number, it became necessary to make arrangements at once with some one to supply the fertilizers to be used in the experiments. We consulted with several responsible dealers that were most accessible, and as the Mapes Formula Company were the first we met who cheerfully and heartily entered into the project, arrangements were made to have the fertilizers put up by them. The reason why we did not merely name the fertilizers, and suggest that they might be had of any reliable dealer, was because, in a first effort, it seemed desirable, important even, to have the work concentrated at one point, to secure the needed analysis and oversight, and the necessary uniformity in the materials furnished. It is due to Messrs. Wm. H. Bowker & Co., well-known dealers in fertilizers, at Boston and New York, to say that, on seeing our announcement, they at once offered to supply the trial samples on the terms named, and with all desirable guarantees. We would have been glad to have them do so, as we have every confidence in their ability and character; and we might say the same in regard to several others first-class dealers. But it is hardly practicable, at this time, to make any other arrangements than those announced last month. We hope some similar project may be carried out another season, embracing the entire country, and a number of those dealers who guarantee the quality of their articles.

Sale of Fine Jerseys and Family Cows.—Mr. Thomas Fitch, of New London, Conn., announces a sale of thoroughbred Jersey cattle and high-grade animals, bred especially for family cows. No breeder has been more successful than Mr. Fitch in making crosses on the Jersey with the effect of producing high milk and butter-yielding cows. This has been an especial business with him for more than 30 years. His herd numbers over 100 head of young and mature thoroughbred and cross bred animals, many of them being rich butter-makers, and all of them good. Mr. Fitch's announcement will be seen elsewhere.

Calcicake is the name adopted by the Averill Chemical Paint Co. for a very convenient article, which will allow those who wish to calsomine their own walls to do so, if they have only ordinary skill.—The materials for the wash are in cakes, which need only to be dissolved in boiling water, to be ready to use. The shades are delicate and pleasing, and we have no doubt that the Averill folks have hit upon a most popular thing.

Lumps on a Horse's Shoulder.—"J. L. R.," Chillicothe, Mo. When collar-galls have irritated the bone of the shoulder, and hard lumps have formed there, they can not be removed; they are growths of the bone, and beyond the help of the surgeon.

Grass for Montana Territory.—"J. S. H.," Cheyenne, M. T. makes several inquiries, which we would have answered by mail, but he gave only the initials, as above. As stamps were enclosed, a reply by mail was probably looked for, but, of course, this is impossible. There is a book on irrigation, in which all the information as to grasses for sowing, mode of preparing and cultivating the ground, making ditches, laying out meadows, and the manner of irrigating and generally managing them, is fully given. This is "Irrigation for the Farm, Garden, and Orchard," by Henry Stewart, sent, post-paid, for $1.50, by the Orange Judd Co. For planting along the ditches, the common cotton-wood, or white willow, would be easy to procure, and would grow readily from cuttings. Oats should be sown as soon as the frost is over, and the ground is fit for working. Timothy-seed can be procured at Omaha, or Lincoln, Nebraska. The cost is about 5 cents per pound.

The Little Washer, made by Geo. D. Bissell & Co., Naugatuck, Ct., having been advertised in our advertising columns for some time, we have received numerous letters concerning it. To such we would say: The washers in the market are of two kinds; in one the clothes are washed by rubbing, or squeezing, and in the other by a continuous flow of boiling suds over and through the fabrics. In an article on page 144, we have shown the difficulties that attend the introduction of all aids in washing, where the "help" (so-called because they *hinder*) are prejudiced against them. We have tried the "Little Washer" sufficiently to know that an intelligent person, one who is not "sot agin" it, can make it a useful aid in the family washing. The same principle is employed in establishments for cleansing large quantities of fabrics. Where stupidity and prejudice combine against it, no domestic appliance is of any use.

The Asbestos Paints, made by the H. W. Johns Asbestos Mfg. Co.—To those who write, inquiring about these paints, we would say that we can not give a final opinion until five years after we have applied them. We can say now that they promise well. We used them last year on several buildings. The tints are pleasing, and the one who applied the paint found it to cover well. We used it upon both old buildings and new, and, judging from its workings, we should not hesitate, had we more painting to do, to use this.

Hybridizing Plants.—J. W. Tower. We wrote you a letter giving the title of the best work on the subject, but when we came to direct the envelope, we could not find the State—so our letter and yours kept company in the waste-basket.

Flax for Seed.—"J. B. G.," Rockwell, Iowa. When flax is sown for seed, one bushel per acre is sufficient. When it is thinly sown, the plants branch, and have many more seed-bolls than when sown thickly. For the fibre, which should be fine, two bushels per acre are sown. Flax-seed should be sown early, about the time that oats are put in the ground.

Sundry Humbugs.

Alas for Russell & Co.! Has their glory departed? From a dozen of their circulars a day, the thing has gone down to three or more in a whole month! Those watches "valued at $150.-00," and those lots of jewelry "valued at $250.00, $280.00," and all sorts of other values—can they have been exhausted?...Our last intelligence as to this "Lot of Jewelry," comes from a jeweler in Laporte, Ind., who, just for the fun of the thing, had a $280 lot of the "Jewelry" sent to him. He writes: "I find them to be a lot of very well finished, but worthless trash, the wholesale price of which I would rate at $5 to $8."—Here is the testimony of an *Expert*, which those innocent people, who think that any one will give them more than a Dollar's worth for a Dollar, will do well to remember. Exit Russell & Co., but "powers behind the throne" are by no means dead. "Draw it mild," Messrs. E. & Co. Some one is now on the track of your latest developments.... We hope that our warning against

FARMERS GIVING NOTES

have been sufficiently strong and frequent to, at least, make the readers of the *American Agriculturist* stop and think a little before they get caught in such a trap as three of New Jersey farmers walked into. We again repeat, to not only farmers, but to all other readers,

BE CAREFUL HOW YOU SIGN **a paper of any kind,** AND TO ANY TRAVELING AGENT WHATEVER.—

DON'T SIGN ANYTHING.

Many of these cases do not get into print at all, the victims bearing their losses in silence. The Trenton (N. J.,) "State Gazette" gives a recent case of this kind, and we mention it in brief, not to expose the folly of the victims—for men who are honest themselves are the most easily taken in by such scoundrels—but as *a warning to others*.

"Two men named Clarke" presented themselves as agents for a patent wind-will. They sold the "right" (farmers, mind how you buy "rights," for they often turn out big *wrongs*,) for Warren Co., to James Dereamer, Isaac Dehart, and Abraham Pursell. These gentlemen gave a note to these Clarkes for $700.00. Having a note from well-known and well-to do men, the Clarkes went to a neighboring town, where there was a bank, and had no difficulty in getting it discounted. But the Clarkes were well up in their business; they came back to the makers of the note, and told them that they could not get it cashed. The account ends thus: "The farmers then gave them $700, since which time nothing has been heard of the agents, nor have the farmers received their wind-mill." We hazard nothing in predicting that those agents and that wind-mill will not be again heard of in Warren Co., N. J. The chaps have made a clean $1,400, and they will not again be found in Warren Co., or in any other Co. in New Jersey. Fourteen hundred dollars in a State no bigger than New Jersey is a big haul. Can we add anything to this plain statement of facts? This is a specimen of

THE SWINDLES UPON THE FARMERS

that are being practised all over the country. We would not say, "Have nothing to do with *any* traveling agent," as that would be unjust to many honest men who are engaged in introducing articles of real value to farmers; but we would ask every farmer to exercise proper business shrewdness, and to distinguish the swindler from the real seller. A few weeks ago a seller of mowing machine knive sharpeners, coaxed, worried, and finally bullied an honest man in Pleasantville, N. Y., into signing a note for a lot of worthless machines, and now the note is sued in a distant town, requiring as much expense for time and lawyers to defend, as the amount of the note itself ($200). We may state it as a safe rule—if you can not make a trade without *signing anything*, you had better let that trade go by. The land is so full of swindlers, that there is no safety in any other course. So we repeat our caution—and it would be well if it were put up in large letters, where it can be seen daily—"With all strangers, with all traveling agents,

FARMERS, BE CAREFUL WHAT YOU SIGN."

Let no "Exclusive Agency," let no prospective profit, let no palaver of any glib-tongued salesman—no matter what he has to sell, no matter what hopes of a sudden fortune he may hold out—induce you to put your name to *any kind of a paper*. If one comes to you well recommended, if he is honest, he will willingly wait until you can find out if his credentials are true. Make no snap-agreements; jump at no great chances. Whoever comes along with an honest thing will be ready and willing to have it examined through and through. Deal with no others; and we now say to *You Farmers*—you for whom we have worked year in and year out in examining "Humbugs" of all sorts, we say, with renewed emphasis,

BE CAREFUL WHAT YOU SIGN.

MEDICAL MATTERS

are not many, but we can not say that they are dull this month, as we have one first-class one, worth a score of the common kinds. About a year ago, we saw a small sheet announcing it, but have only recently come into possession of the work, giving a full account of

"THE METAPHYSICAL DISCOVERY"

of one Mrs. Brown. In that remarkable paper, the "N. Y. Tribune," Mrs. B speaks of her work as "the most valuable pamphlet in the world." We are quite sure that there is not another like it. "Metaphysical"—we should say so! We never met-a-physical, or physic-ing thing, that could begin with it. We can say, without any metaphor, that we never met-afore anything that proposed to work a greater metamorpho-sis in the sys-tem of medicine than this work; and we never met-a-physician who could meet and physic one equal to this metaphysician. The Indian doctors are nowhere. Metamora was a big Injun, but we never met-a-more astonishing piece of indian-oolty than this metaphysical discovery. Whatever Mrs. B. may be on doctoring, none can dispute her literary ability in presenting her doctrine. We first received a paper called

"THE LEASE OF LIFE,"

which professes to be issued by the "Metaphysical University in New York." The "Lease" is not "signed," but it tells us at the very top of the first page what it is. For it says: "When the MUCUS MEMBRANE connected with the nose is *plugged up*—for want of suitable moisture—the death warrant of the body—is signed." This plugging is awful business, for we read: "There never was a fever since the world began that was not produced from a *plugged-up head*." Has this anything to do with a "plug-ugly?" Is one who wears a

"plug hat" on his head any more liable to a "plugged-up head" than another? We read that: "The head is the *seat* of life, also the seat of death," which makes it rather hard on the head. But what can one do with a "plugged-up head?"—Ah, here we have it.

"THE METAPHYSICAL DISCOVERY

courses through the *head* and *trunk* of the *body* as the rivers of the Sea course through the earth." And when we read below that "LANGUAGE FAILS to unfold the Treasure contained in the METAPHYSICAL DISCOVERY," we find the first statement with which we can agree—just so . . .Mrs. Brown has got this disease business down to a dot. She starts with asking us to "Consider that the Body is the Earth."—Well, we have seen some bodies where that consideration was not a difficult one.—"The hair is a field of grass," (that, probably, is the reason why some people have "hay-seed" in their hair.) "The eyes and ears are plants." This "Discovery" doesn't go around the body sort of promiscuous like, but it finds its way in through the eyes, ears, and scalp. So, to carry out the agricultural similies, she has "dew" for the eyes, and "rain" for the ears, and some stuff for the scalp analagous to "frost and snow," and we should judge by the venerable gentleman she uses so freely for a "figger-head," whose scalp is as bare as an egg-shell, that he has been subjected to pretty hard treatment, which is not surprising when we are told that the "Scalp-Renovator" is the "most thorough, logical and gentle cathartic in the world," and that it "enters the system through the canals of the head, and works wonders." Besides this remarkable paper, there is a large pamphlet of over 80 pages, filled with such farrago. A remarkable thing about it is the way in which Scripture is quoted; some of the allusions bordering closely upon profanity.

THE SAME OLD TUNE TO NEW WORDS.

There came to us a few days ago, a letter from a correspondent in Wisconsin, which enclosed a written circular, with the printed heading:

"CLARK & CO., ADJUSTERS OF CLAIMS IN THE U. S. AND EUROPE.

1,267 BROADWAY, NEW YORK,
22d February, 1878.

N. S. T., Esq.:

DEAR SIR.—Is this your signature on the inclosed slip of paper? If so, you are entitled to a certificate of gold-mining stock valued at five hundred dollars. The money you sent in the letter, from which the inclosed slip was clipped, was invested on the general margin principle, which resulted in lawfully securing for you the certificate of stock referred to above. Now, if you will write to us, and return the inclosed slip, so we can compare it with your signature, we shall be sure the proper party will receive the stock. Respectfully, CLARK & Co.

P. S.—State whether you wish the stock sent by registered letter or by express. C. & Co."

Within this letter was a small "slip of paper," which had evidently been cut from a letter to which it was the signature, on which was

"Respectfully, &c., N. S. T ——.
Box 97."

This our correspondent admitted to be his genuine signature, but how it came into the possession of the New Yorker, was more than he knew, but being convinced that the whole thing was a "humbug," he left it with us to do with as we pleased. As the matter seemed worth looking up, we called upon Special Agent Sherrett, who has a sharp scent for frauds, and a most decided method of dealing with them when found. We saluted him with the information that we had a new scheme. "So have I," he promptly replied; "I was just thinking of you, as I have a bran new one."—We gave him our documents, and he had not read two lines aloud, before he placed his hand upon a letter upon the desk before him, and handed it to us, with a "look at that!" and as he read the letter we had brought, we followed the lines, upon the one that had just been received by him, and, with the exception of the name of the person addressed, the two were the same, word for word. He informed us that he had been to the place, a building far up Broadway, in which offices are rented, but could find no one in. "I'll tell you what it is," said this shrewd officer; "this is another development of that old silver mining scheme, Russell & Co., and all the rest of it, and you'll find Elias at the bottom of it."—We became interested in the matter, and had one of the discreet and confidential young men in our office, try to find Clark & Co., and learn about the "stock." He had to make several visits before he could find any one in the building who knew of such firm; but at last ascertained the room occupied by these "adjusters of claims," and by going out of business hours, caught some one "at home." A very barren office had a few chromos setting upon the floor against the wall, there was a most venerable desk, and a stove, which, with a well-to-do-looking person with a gray beard, (and whose identity is more than suspected), mainly completed the furnishing of a most desolate place of business for parties engaged in adjusting "claims in the U. S. and Europe." The correspondent had sent us an order to get the money for that $500 worth of stock, and our representative made known his business. Immediately the venerable individual became a "known-nothing;" he wasn't "Clark & Co." at all; he only "represented" them. *His* business was selling chromos and jewelry, though there was nary a jewel visible. But he did know enough about "Clark & Co." to be sure that in the press of their "immense business," this letter was all wrong. It was misdirected in the hurry of their overwhelming biz. That letter was not intended for that particular man—a likely story, as the enclosed signature clipped from some letter exactly corresponded with the direction on the outside of the envelope. Not a blessed word of information as to stock, or anything else, could be extracted from their representative, concerning "Clark & Co." He was drier than a cod-fish—and *our* representative came away, leaving him with his chromos, his very rickety desk, and his stove, to report progress. But other parties had an interest in "Clark & Co." A gentleman in Missouri had received a letter, word for word like that of our Wisconsin friend—and another in Fall River, Mass., had been similarly favored, and both of these sent their documents to Superintendent of Police, Walling, who put the case into the hands of Capt. Williams to "work up." Capt. W. visited the business place of "Clark & Co." several times, but no one was in. Knowing that these chaps—whose doings are entirely by mail—would be likely to be "at home" to the letter carrier, awaited his time; the letter carrier appeared, the door was opened at his knock, and Capt. W. nabbed the young man who opened it, (not the venerable citizen of the day before), and marched him and his bundle of letters to the station house. The young man convinced the officers that he knew nothing of the business of "Clark & Co."—and he was discharged to appear when required. That this firm—which has no real existence—was doing a flourishing business, is shown by the fact that, at this haul, fifty-seven letters were taken, which were turned over to Postmaster James, to be sent to the Dead-Letter Office, where all letters addressed to "Clark & Co." will bring up. It seems that those silly enough to catch at the bait, and say that the enclosed "signature" (see letter above) was theirs, were served with certificates of stock—very pretty certificates they are said to be—and with these a bill of charges for "*commissions and expenses.*" Here is where the *profits* came from. As it would be some time before the fraud would be found out, "Clark & Co." were doing a flourishing business—as the fools are by no manner of means anything like all dead yet. Indeed, worse than fools—for there were a most lamentably large number, one mail brought 57 of their letters, who, in the hope of getting "a certificate of gold mining stock," were willing to admit the statement to be true, that they had sent money "in the letter from which the enclosed slip was clipped," and thus acted upon what they knew to be a lie, because they expected to *make something* by it. These persons are not one whit less dishonest than "Clark & Co.," and we think it a great pity that their names could not be made public—though this punishment could hardly be equal to that which each one must receive, when he thoroughly despises himself, for having admitted a lie, in order to allow a gang of scoundrels to swindle him! But, the question will be asked:

HOW DID "CLARK" & CO. GET THE SIGNATURES.

The police authorities think they were procured through the dishonesty of some postmaster. It could hardly be practicable to purloin many thousands of letters from any one Post-office. We think it more likely that they were picked up in junk shops, where the "waste" of hundreds of large establishments is gathered. Unimportant letters are thrown into the waste-basket entire, without even being torn across. A junk-shop is often a well-worked mine for dealers in signatures. As we have stated that there is no such concern as "Clark & Co.," the question will be asked

WHOSE FUNERAL IS THIS?

The young man arrested with the letters, by Captain Williams, said that he was employed by "Elias Brothers."—"Here we are again."—"Now you see it, and now you don't."—It showed the shrewdness of our friend the Postal officer, who, with the same acuteness that allows an Indian to tell the tribe to which another belongs by the prints of his moccasin, saw in the letters and ways, as the frontiersmen say, "fresh sign" enough to induce him to conclude that the tracks of "Clark & Co." were made by the tribe of Elias. And the man that our representative found "representing Clark & Co." at the office, but who did not "represent" worth a cent? *Par nobile fratrum*—they could not be long separated, and wherever the Eliases are, he will not be found far away. He was then "representing Clark & Co." No doubt he had rather have been at home, teaching his children, if that breed is allowed to be perpetuated, that charming nursery song, "Pat-tee cake, pat-tee cake, baker's man." We have given more space than usual to this one swindle, as it shows how deep-laid and well-guarded are these schemes; and will show those good people who freely ask us to "please investigate, and reply by return mail," that these investigations are not so easy as they seem at a distance. Some may wonder why the Elias Brothers were not arrested. Simply because no citizen of the State of New York has made a complaint against them.

The Ailanthus and its Uses.—Prof. Chas. S. Sargent, Director of the Arnold Aboretum of Harvard University, and also a member of the Mass. State Board of Agriculture, has contributed to the Annual Report of the Secretary of that Board, some most useful "Notes on Tree Planting." The portion of these notes which we have read with the most interest, is that relating to the economical value of the Ailanthus. The *American Agriculturist*, in spite of much ridicule, long ago recommended this tree as one, that for its rapid growth, and its usefulness for fuel and timber, was well deserving the attention of tree-planters. It is true that the tree has one, easily avoided fault, which cannot, in the mind of any sensible person, offset its usefulness. We know of no work in which the reasons for planting the Ailanthus are stated more in full, and forcibly, the opposite side having a fair showing, than in this paper. Prof. S. quotes an example which we some years ago referred to, of a set of furniture made of Ailanthus wood, which can not fail to convince any one of its utility for such work. The paper is by no means devoted exclusively to the Ailanthus; he gives other matters that will be of great use to the increasing numbers of tree-planters in Mass., and of equal value in other parts of New England—indeed we may say to the country at large—for all earnest workers, like Prof. S., "build stronger than they" know.

Heebner's Level Tread Horse-Power.—A horse-tread power, made by Heebner & Sons, of Lansdale, Pa., possesses a very notable improvement. It is in the raised position of the lower edges of the treads or lags upon which horses move, that this improvement consists. This brings the tread planks in a very easy position for the horses, so that there is little or no strain upon the muscles or tendons, and less fatigue to the animals. This peculiarity belongs specially to this machine, and gives it a prominence amongst other machines, which renders it worthy of more than usual notice.

Pressure at Paris.—The Boomer & Boschert Press Co., of Syracuse, N. Y., whose remarkably powerful presses attracted so much attention at the Centennial, have sent a specimen press, which will no doubt astonish the wine growers, to the Paris Exposition.

"Vegetable Plants" is the title of a work by I. F. Tillinghast, of Tillinghast Bros., Factoryville, Pa. In this work, they give the methods which they have found successful, especially with late cabbages. It has received the commendations of a number of practical growers. The terms on which it may be obtained are given in the advertising columns.

The Treatment of Sick Cattle.—Probably one half of the letters addressed to the editors, relate to trouble with domestic animals. The present season is one when the greatest care is required to prevent disease in our cattle and other live stock. To prevent, is much better than to cure; and in general it is vastly easier. To prevent disease, it is necessary to know the cause of it, what it is, what symptoms are to be looked for at the outset, and the best method of treating disorder at the very start. A trustworthy *hand-book* giving the proper care of cattle, and the treatment of their diseases, is indispensable to every farmer; yet, a very small proportion of the owners of animals possess any book of the kind. The cost of one of the best of these books would be repaid by the prevention of the loss of one week's milk of a sick cow, the saving of a lamb or young pig, to say nothing of the avoidance of more serious losses. Dadd's "AMERICAN CATTLE DOCTOR," is a standard work of this kind, and will be found of the greatest value in every farm-house. It is published in two forms; one at $1.50, and one at $2.50, sent by mail, by the Orange Judd Co.

Just a Mere Mention.—Pamphlets and other publications of minor size, but of great instrinsic value, come to us, and we put them aside, hoping for the space in which to give them proper notice, but which never comes. We find, awaiting notice, numerous documents which we must now acknowledge merely by title, or not at all....THE SUGAR BEET in North Carolina, by Prof. A. Ledoux, chemist to the Department of Agriculture of that State. A valuable contribution to our knowledge on an industry which must ultimately become of great importance in every State....THE MENHADEN FISHERY OF MAINE, with reference to its relations to Agriculture, and also as a source of human food. A valuable contribution to all who live on the coast, and fully illustrated by engravings and maps...."A LIST OF THE FUNGI found in the vicinity of Boston," by Prof. W. G. Farlow, is not merely of interest to botanists, but to those who would investigate the attacks of fungi upon useful plants....A

similar remark may be made of a paper with the unattractive title of THE ERYSIPHEI, by Prof. C. E. Bessey, of the Iowa Ag'l. College, in which he describes, and figures some of, the minute fungi that injure our fruit and other trees...."THE AMERICAN JUNIPERS," "THE OAKS OF THE U. S.," and "THE AMERICAN FIRS," are papers of interest to every nurseryman; and when we say that they are by Doct. Geo. Englemann, of St. Louis, Mo., their scientific value will be admitted by all....VENNORS' ALMANAC, Montreal, Canada, J. Dougal & Sons, is a very full work of its kind, and claims that its weather predictions have been fulfilled to a remarkable degree....The REPORTS from New Jersey, for 1877, are interesting documents; we have that of the Rutger's Scientific School; the general report of the State Geologist, Prof. Geo. H. Cook, and a special report on the extensive Clay Deposits of the State, which cannot fail to have a high economic value.

Help for the Flower Garden.—We have shown the difference between the modern style of flower gardening, in which the effects—and often most brilliant ones—are produced by massing flowers and foliage; and the older style, in which plants, so to speak, stand on their own merits and are grown as individual specimens, each for its own sake, and without any reference to its effect in a mass. Those who really love flowers, like to read about them, and wish for something more than the mere directions as to their planting and treatment. We know of no work more gratifying in this respect, than Breck's NEW BOOK OF FLOWERS. The author, when he had reached an advanced age—about 70, we think—so revised, indeed almost entirely re-wrote his former "Book of Flowers," as to warrant the prefix, "New," to the title. The author's personal experience is told in a charming style, and show how great was the love for flowers which he held through a long, busy, and useful life. We would not imply that the work omits all notice of the use of plants in masses, as it gives sufficient directions for this style of gardening; it is devoted to the description of annuals, biennials, and perennials of all kinds, and of course includes the "bedding plants;" also ornamental shrubs. Sent from this office by mail for $1.75.

Protecting Seed against "wire-worms," mice, and other vermin.—"R. W. D.," Flint, Mich., writes that the following method of treating seeds is sent him from England, and he wishes to have it tried in this country and reported upon. It has long been in use in England, as we see it frequently mentioned in the journals. It consists in the use of Red Lead, in the proportion of half a pound to a bushel of seed grain, peas, or other seed. The seed is first moistened with water, and the dry Red Lead sprinkled over it, stirring to secure an even coating. Spread the seed to dry, and then sow.

The Buckeye Mowers and Reapers.—The Buckeye Mowers and Reapers, made by Messrs. Adriance, Platt & Co., of 165 Greenwich St., New York, have long held a very high position in public estimation. While many great and very useful improvements have been made in agricultural machinery during the past few years, the Buckeye machines have kept pace with the foremost in all respects, and have maintained their popularity in spite of the strongest competition. The new Model Mower, wholly of iron and steel, is really a model of beauty, lightness, and effectiveness, and the new reaper has every appliance that can make it desirable and effective in the harvest field.

Special Crops—Special Instructions.—By these we mean crops not included in the usual farm rotation, but which require a different treatment from the ordinary crops, either in their cultivation or their preparation for market. If one farmer happens to make a hit with a crop of this kind, for example with hops, so soon as his success becomes known, hundreds of others, without properly considering if their soil is suited to the culture, or if they can handle the crop when raised, will rush into hop raising blindly, and lose money. Hundreds of others, more cautious than these, will write to us and ask us to give a full account of hop culture, from the planting to the marketing. As with hops, so with several other special crops, such as tobacco, flax, etc. As there is a great deal of detail concerning each of these, and as the processes vary in different parts of the country, it would take more space in the *American Agriculturist* than could be properly devoted to them, as they would be of interest to but a very small portion of the whole number of readers. In view of this, we several years ago adopted the plan of offering prizes for essays by practical growers of these special crops, thus procuring the freshest and most trustworthy information, and the prize essays, with the most important of the others, were published in a pamphlet form, at a low price. These pamphlets, we are sure, contain the best information concerning these special crops, to be found any where in print, as they give in detail the practice of experienced growers. They are worth more than they cost, if they only show one that his land is unfitted or his means are unsuited to the particular culture of which they treat.

If one wishes to know all about HOPS, from the planting to the curing, baling, and marketing, let him send for our treatise on HOP CULTURE, in which is given the experience of ten different cultivators. Price, 30 cts.

The culture of TOBACCO is presented in the same manner, the experience of fourteen growers in one pamphlet on TOBACCO CULTURE, which can be had for 25 cts.

Those who think their land suited to ONIONS, can get the story as told by seventeen persons (most of whom have grown the crop all their lives in the best onion districts,) in our ONION CULTURE, which is sent for only 20 cts.

The FLAX crop is similarly treated, the essays of a number of experienced growers being collected in our pamphlet on FLAX CULTURE, which may be had for 30 cts.

Another special crop, which has recently attracted much attention, is Broom-Corn. Our work on BROOM-CORN AND BROOMS not only gives the best cultural directions, but shows how the product is worked up into brooms. As this required a number of engravings, the price is a little higher—50 cts. in paper, and 75 cts. cloth.

The practical character of the above-named works is such, that one who contemplates a trial of either of these special crops, *can not afford* to do so without first consulting their contents, and learning not only what others have done to attain success, but what to avoid.

Calibre of Shot Guns and Rifles.—The diameter of the *bore* of shot-guns is usually indicated by numbers—No. **10** and No. **12** being the sizes most in use. No. 10 is a trifle over 11-fourteenths of an inch, or about 4-fifths of an inch. No. 12 is just three-quarters of an inch inside diameter. The "Forest and Stream" gives the following as the exact measurement: No. **8** is 860-thousandths of an inch; No. **10** is 793-thousandths; No. **12** is 750-thousandths; No. **14** is 715-thousandths; No. **16** is 685-thousandths; No. **18** is 650-thousandths, (?); No. **20** is 627-thousandths—the lowest numbers being the largest, and the highest numbers the smallest.—The calibre of rifles, (target, Creedmoor, sporting, army, etc.,) is expressed in *hundredths* of an inch. Thus: 50 calibre means 50-100ths, or exactly half an inch. The favorite long-range rifle is 44-100ths of an inch. Target rifles and pistols run all the way down from 44-100ths to 22-100ths, the last being about the size of medium buck-shot.

Horticultural Societies have favored us with their reports, but we can only acknowledge them with our thanks....The Ag'l. and Hort'l. Society, of Montreal, Canada, send reports of their Fruit Committee, full of valuable information....The Western N. Y. Hort'l. Society, of which P. Barry is Pres't., hold a meeting, have sensible talk, and get out their report *at once*, which doubles its value....The Minnesota Hort'l. Society, send a handsome volume full of matters of interest to all who live in that State or a similar locality....The Pennsylvania Fruit Growers' Society is doing much good. Its last report is well illustrated; and when we say that Josiah Hoopes is President, it will be understood that things move, one way or another, and that very quick.

An Agricultural Journal in Japan.—Japan is a constant wonder. Having shut itself out from the world so long, it would seem to have devoted this seclusion to preparing itself to accept the best that other countries had to offer, whenever intercourse should be opened. To be sure, it has made some mistakes—but very few. It started an "Agricultural College," which some of our older States and other countries find a great puzzle, and do not know what to do with it, now that they have it. But the Japanese are shrewd enough to distinguish the ornamental from the useful, and in starting an Agricultural Journal, are evidently getting upon the right track. This journal has a handsomely illustrated title page, which, as it is their custom to begin their books "hind side before," is at what we should consider the end of the work. It has, besides the cover, 20 pages of teachings which we have no doubt are excellent; including an illustrated article on the grapevine. We wish our Japanese fellow laborer much success.

Schedules of Prizes, have been received from the N. Y. Hort'l. Society, offering abundant prizes for the spring, fall, and other shows.....The Worcester Co., (Mass.), Hort'l. Society sends a schedule which shows this useful association to be wide-awake ...The Mass. Hort'l. Society, offers *only* about $4,500 in their various prizes, and we think shows no sign of collapse.

Percheron and "Percheron-Norman" Horses.—"C. W.," Freeborn Co., Minn. The true Percheron horse is not a large-boned, long-legged, loosely built horse, but many of the half-bred so-called Normans are. There have been many trashy coarse misshapen horses imported into this country as Percherons, which have brought discredit on the race, and an effort is now making to let these down easy by calling them "Percheron-Normans," a name which signifies only that they are not Percherons. In selecting a horse for breeding, one should not be misled by the large size and great bone. Compactness of frame, fine bone, well knit joints, a clear, bright, intelligent eye, broad forehead, a short round barrel, good chest, and good temper, should be looked to before monstrous size. The breed is well described in "The Percheron Horse," translated from the French, sent from this office, post-paid, for $1.

Exports of Meat, Butter, and Cheese.—The exports of meats, live-stock, and dairy products for the period from January 1st to March 8th, 1878, in comparison with last year, are given as follows:

Jan. 1, to Mar. 8, 1878.	—*Value.*—	—*Total for* 1877.—
Fresh Beef..12,261,440 lbs.	$1,112,567	101,971,504 lbs. $10,047,699
Mutton..... 399,855 "	20,837	2,114,340 " 119,900
Sheep, live.. 4,059 "	23,425	13,176 " 68,960
Cattle, live.. 2,171 "	200,525	20,057 " 2,987,740
Horses..... 479 "	71,530	4,668 " 750,220
Mules..... 1,013 "	161,180	1,650 " 283,900
Hogs, live, & dressed, 765,000 "	39,999	284,000 " 17,040
Butter.....17,619,839 "	same time last year...	13,566,110 lbs.
Cheese.....118,425,531 "	" "	82,887,068 "

While the exports of meat and live-stock, with the exception of sheep and mules, have decreased somewhat, the very large increase in dairy products is noteworthy. It is of interest also to note here the growth of shipments by way of New Orleans, of Western products, as shown by the following figures, viz.:

Shipments of Corn from N. Orleans, Sept. 1, '77, to Mar. 1, '78
1877.... 783,126 bushels } Increase 1878, 2,926,396 bushels.
1878....3,709,522 " }

The shipments of wheat from this port, also show a marked increase the present year.

A Poland-China Record.—A meeting of breeders of Poland-China Swine in the United States and Canada, was held at Cedar Rapids, Iowa, January 23, 1878, at which it was agreed that a *record*, for registering the pedigrees of this breed of swine, has become a necessity. For the purpose of publishing such a record, an incorporated company was formed, every breeder present becoming a stockholder. The following officers were elected: President, W. P. Sisson; Vice Presidents, B. F. Dorsey, Jos. Morton, Wm. A. Macy, S. A. Clark; Secretary, J. T. Mitchell; Treasurer, J. C. Traer. A standard of entry was agreed upon, and an Executive Committee appointed, who will pass upon all pedigrees. A report of the proceedings can be obtained of the Secretary, at Cedar Rapids, Iowa, for 15 cents.

The N. Y. Horticultural Society's monthly meeting, held on March 5th, was by far the best attended of any since the organization of the Society. Besides many professional gardeners, quite a number of amateurs were present. The display of Hyacinths in pots was unusually fine. The first premium was awarded to Mr. Rohers, florist, of Jersey City. He was followed closely by James Murkland, of 12 Cortlandt street, whose plants, considering that they were grown in an ordinary sitting-room, were highly creditable. A dozen fine specimens of Double Geraniums, exhibited by Mr. Reynolds, of Flatbush, L. I., were awarded a special premium. George Such, of South Amboy, carried off the $20 premium for cut-flowers, offered by the President of the Society. Fine specimens of Cyclamen and "Cornelia Cook" Roses, sent from Mr. Jones, gardener, at Madison, N. J., took a special premium. An interesting lecture, given by Mr. Bolleau, on training and pruning Pear-trees, was received with marked attention. A paper from Dr. John A. Warder, of Ohio, suggesting a "Governmental Bureau of Forestry," was received rather coldly, the Society evidently having the idea that there are already about enough of such Government Bureaus. Henry Ward Beecher, of Brooklyn, and Thomas Meehan, of Germantown, Pa., were elected honorary members.

For Boys and Girls, and other players of games.—When Aunt Sue gets hold of a pleasing game, she naturally hastens to tell others about it; hence, when a lady showed her the game of "Word Making," given on page 145, she at once sent it for the Boys and Girls' Department. Having somehow got the impression that "Logomachy" was one of the names of the game, she gave that as one that you might use, if you liked it better than "Word Making." She has, since the article was printed, (that part of the paper being on a separate sheet, and printed a week or more before this), discovered that "Logomachy" belongs to a different game. It is a name for a game invented by a gentleman in Ohio—Mr. F. A. Wright—and one which we have no right to use for a different one. Of course neither Aunt Sue nor ourselves, knew of this, when the article was put in type, and a part of the sheets were printed before the accident was discovered. The mistake has been remedied in a part of the edition; those of you who may get a paper in which "Logomachy" is given as one of the names of the game,

are requested to draw a pencil through that word, to remind you that it belongs to a very different game. But good things are often hit upon by more than one person, and it now appears that the game described by Aunt Sue, though quite unlike Mr. Wright's, is similar to one offered for sale by C. E. Hammett, Jr., a well known bookseller, of Newport, R. I., who furnishes the boxes of letters, with printed directions for playing the game, which he will furnish by mail, post-paid, at 27 cents. We may add that we hardly know of any other way in which this small sum will afford so much amusement, as besides the game referred to, the same letters may be used for various other games described by Aunt Sue.

Percheron Horses.—A meeting of importers and breeders of Norman or Percheron horses, was held at Peoria, Ill., on February 14th last. The chief object of the meeting was the change of name of the Association of breeders and importers of Norman horses, and the addition of the word Percheron before the word Norman. This object was accomplished. The stud book will now be called "Percheron-Norman." A motion to the effect that the Percheron and Norman horses were one and the same breed, was laid on the table. This is well, as all the "resoluting" would hardly change the fact that they are different horses in many respects. Only imported horses, native full bloods, and animals having five pure crosses, can now be admitted to the stud book.

Scurvy in Poultry.—"A. C.," St. Mary's River, Ga., sends the following account of a fatal disease affecting fowls in his locality, which he calls "warts:" "The warts begin to show themselves with warm weather—(here, our climate is nine months summer, and three of spring), generally about the head and neck, working towards the mouth and around the bill. They resemble the human 'small-pox.' The pustules are filled with yellow-colored matter. If the warts get into the mouth, the bird is choked, as the tongue and throat swell up, as in diphtheria. As remedies, sulphur, gas-tar, kerosene, etc., have been tried in turn, and failed. The birds, as well as chicks, are attacked. Sometimes the whole body is affected, when the feathers fall off. Turkeys, likewise, have the disease, but 'water-fowl,' such as geese and ducks, in the same yard, are perfectly free from it."—The disease is scurvy. It is, fortunately, rare, because, when it attacks a flock, it generally destroys the whole, unless measures are taken to stop it. These are, to administer to each bird ten grains of sulphur and one grain of calomel, every alternate day; and to apply to the diseased parts an ointment, made of one ounce of sweet oil, mixed with one-third of an ounce each of sulphur and turmeric. The disease is in the blood, and is not warts, by any means. To prevent its spreading, give chopped fresh vegetables and boiled oatmeal mush to the other fowls; and put in the drinking water enough Aromatic Sulphuric Acid (Elixir of Vitriol) to make it decidedly sour to the taste. Also, separate the sick birds from the well.

The Pip in Poultry.—"W. T. W.," Dutchess Co., N. Y. Poultry are sometimes troubled with a disease known as "pip." This is inflammation of the tongue and mouth, with the growth of a horny scale on the point of the tongue, which prevents the fowls from feeding. Give each fowl a pinch of powdered chlorate of potash, dropping it into the throat and upon the tongue, and remove the scale with the point of a penknife.

Fresh Manure bad for Potatoes.—"J. H. T.," Palmyra, O. Fresh manure is hurtful to potatoes. This crop needs old well-rotted manure, or the tubers are apt to be scabby, and to be infested with white worms. Fresh manure may be used for corn without any ill effects. The corn rather likes it. There are no potatoes so clean and free from blemish, as those grown with the artificial fertilizers.

To get Land under Grass quickly.—"A. M. D.," Portsmouth, Ohio. After a wet piece of land has been underdrained, it may be best seeded by plowing and sowing with oats rather thinly. Oats succeed well upon cold moist ground, and upon a sod, and if there are no more than 2 bushels of seed per acre used, the grass seed will take very well with this crop. A mixture of 4 quarts of timothy, a bushel of red-top, and a bushel of blue-grass per acre, would be preferable.

Catalogues of Dealers.—A list of the catalogues received since those acknowledged last month will be found on page 153. This, together with the remarkable variety of advertisements, can not fail to interest all intending to purchase.

Culture of Potatoes.—"H. T.," Portage Co., Ohio. For general planting, now that the potato-beetle is with us as a permanent companion, the early varieties of potatoes will be preferable. Of these the "Early Rose" is yet a standard sort. The "Snowflake" is one of the favorite new varieties for field culture. "Early Vermont" has been found to succeed in some localities, and is worth trial, and there are several still newer early kinds that promise to be valuable. Late potatoes, in the East at least, have mostly succumbed to the beetle, and have been an almost total loss, or have cost more to save than they have been worth. Drill culture is undoubtedly the most profitable. With drills 24 to 27 inches apart for the early kinds, the seed may be dropped in single sets 9 inches apart, or two sets in a place, 18 inches apart. The earlier the ground is prepared, and the sooner afterwards the seed is planted, the more forward will be the crop, and the better able to resist the beetle. Last year the earliest potatoes suffered very little, and Paris Green could not save the late ones.

The Ground Nut, *Apios tuberosa*, was figured and described in January, 1877. It was there stated that the root was one of the many things offered several years ago as a substitute for potatoes. We had not then made a trial of the tuberous root, having never seen any large enough. Last fall, Mr. E. S. Miller, of Suffolk Co., (L. I.), N. Y., sent us a fine lot for planting; there were a few among them about as large as a black walnut—very black-coated and unpromising looking things they were. We had these boiled, and though when served their appearance was by no means attractive, we found them really palatable; quite dry and somewhat sweetish, and with a flavor somewhat between that of a sweet potato and a boiled chestnut. We do not know how long it takes to grow a root like the largest of these, but when grown, and one has a plenty of them, it would take him a long time to starve to death.

To Rid Hogs of Lice.—"W. E. G.," Henrico Co., Va. To destroy lice upon hogs, rub well into the bristles, along the spine, on the brisket, and beneath the arms and thighs, a mixture of lard and sulphur well rubbed together.

Diuresis in a Heifer.—"D. H. H.," Success, L. I. Diuresis, or excessive secretion of urine, may be caused by anything that will unduly stimulate the kidneys. Musty hay, smutty corn-fodder, mouldy meal, bran, or other food, or acrid weeds in the hay, all have this effect. The remedy is to seek out and avoid the cause, and to give mucilaginous drinks, such as oat-meal or linseed-gruel, with a teaspoonful of powdered Peruvian bark, and as much powdered sulphate of iron, daily.

Growing Beans.—"W. S. C.," Fulton Co., Pa. Beans are a valuable crop, and give very little trouble. The most troublesome part of their culture is to preserve them from rain after they are pulled, so as to keep their color perfectly. When damaged by wet, they become stained, and reduced in value. The crop could very well be added to the ordinary rotation—for instance, after oats—as they can be got out of the way in time for sowing wheat, and wheat succeeds better after beans than after oats. Besides there is one more cultivated crop in the rotation, and the wheat would be cleaner.

Belted Cattle.—We have numerous inquiries from many parts of the country for the belted cattle, which were illustrated in the *Agriculturist* for Dec. last. A reply will be found in the advertising columns.

The best Stock for a Milk Dairy. "C. M. W.," Orange County, N. Y. The best cows for a milk dairy are grade Shorthorns. They milk plentifully, giving rich, high-flavored milk, and the cream does not rise rapidly upon it. This renders the milk most suitable for shipping to a city or town market. By good feeding, cows of this kind are kept in good flesh, and when falling in milk, they fatten with rapidity. We cannot see how a milk dairyman can afford to raise calves. Profit is only made from milk, and a dry cow soon "eats her head off." A good supply of dairy cows is to be found in Southern N. Y. and Northern Pa., in the region of the head waters of the Delaware and Susquehanna rivers. A good class of stock is kept there bred to supply purchasers.

"Plain Facts About Florida" is the title of a pamphlet by Geo. W. Dow, Fernandina, Fla. We are rather careful in noticing works about Florida—at least those written with a view to induce emigration thither. The impression prevails, as our correspondence shows, that the advantages of the State have been overpraised, and that many persons have been, by glowing descriptions, induced to go there, who would, if they only could, gladly get home again. This is true of all emigration fevers. We do not believe in such fevers, and our advice has always been, with reference not especially to Florida, but to any other State—Don't move to or locate anywhere, without first visiting the place, and seeing the land. Those, whether individuals or companies, who have land to sell, will present all the attractions of the locality, be it in Florida or Alaska, and utterly ignore the drawbacks, and will continue to do so, as long as human nature remains as it is. We think that this little book of "Plain Facts" is very moderate, especially when we read on p. 13, "Mosquitoes and sandflies are an incumbrance that Florida will never be free from," and that, "Fever and ague prevail in some localities at certain seasons." Evidently the author has eyes to see both sides, and he will prove in the end a better friend to the State than those who represent it is a paradise, which one has only to reach to enjoy and prosper. Sent from this office, post-paid, for 25 cents.

Basket Items continued on page 152.

Exports of Agricultural Produce.

The exports of agricultural products for 1877, were as follows:

Breadstuffs, (which include all kinds of grain)	$140,068,087
Cotton	158,258,286
Oil-cakes	4,276,050
Provisions	109,738,172
Seeds	2,565,783
Tobacco	23,497,479
Fruits	1,836,918
Total	$445,225,725

The total exports during the year were $671,632,366. The products of agriculture furnished, therefore, more than two-thirds of the whole of our foreign exports. This is a fair test of the relative importance of the agricultural interest, as compared with other national industries. When we compare the proportionate demands made by other industries upon the Government for recognition and assistance, with those afforded to agriculture, a very conspicuous inequality is apparent to the disadvantage of the latter. Farmers are permitted to get along as they can without help, and in spite of some hindrances, while other industrial classes clamor for help and get it. If we add to the above figures the vast amount of inland traffic supplied by agriculture, the comparison would be very much more in its favor in one way, and its disadvantage in that pointed out.

More About Farm Experiments.

The following is in addition to the general article, with the above title, given last month, on page 86. An editorial, page 131, gives a summary general view of the object and aims of these experiments; and Prof. Atwater discusses the subject on page 130. It will be noticed that some important additions are made to the "extras," while the regular Set A is unchanged:

Experimental Fertilizers.

Bag No.	Materials. Kind.	Amount.	Valuable Ingredients.	Price per bag.
	SET A.			$ ct
I.	Nitrate of Soda.	20 lbs	Nitrogen.	1.00
II.	Dissolved Bone-Black.	30 "	Phos. Acid	.70
III.	Muriate of Potash.	20 "	Potash.	.60
IV.	Nitrate of Soda. / Dissolved Bone-Black.	15 " / 30 "	Nitrogen. / Phos. Acid	1.40
V.	Dissolved Bone-Black. / Muriate of Potash.	30 " / 20 "	Phos. Acid / Potash.	1.25
VI.	Nitrate of Soda. / Dissolved Bone-Black. / Muriate of Potash.	15 " / 30 " / 20 "	Nitrogen. / Phos. Acid / Potash.	1.90
VII.	Plaster.	20 "	—	.15
	PRICE OF SET A			$7.00
	EXTRAS.			
Ia.	Sulphate of Ammonia.	15 lbs	Nitrogen.	.95
Ib.	Dried Blood.	25 "	Nitrogen.	.80
IIIa.	Sulphate of Potash.	20 "	Potash.	.85
IIIb.	Kainit.	30 "	Potash, &c.	.35
IVa.	Dried Blood. / Dissolved Bone-Black.	20 " / 30 "	Nitrogen. / Phos. Acid	1.25
VIII.	Pure Bone-Meal.	50 "	Nitrogen. / Phos. Acid	1.25
IX.	Fine Bone Dissolved.	50 "	Nitrogen. / Phos. Acid	1.25
X.	Dry Ground-Fish.	50 "	Nitrogen. / Phos. Acid	1.20
XI.	No. 1 Peruvian Guano.	40 "	Nitrogen. / Phos. Acid / Potash.	1.40
XII.	Rec. Guano, "Oneco."	50 "	Nitrogen. / Phos. Acid / Potash.	1.50
XIII.	Nitrate of Soda. / Muriate of Potash.	15 " / 20 "	Nitrogen. / Potash.	1.30

Each article will be put up in a small bag, numbered I., II., III., Ia., etc., as above. Nos. I. to VII. will be put in

a large bag, as "Set A." The price of "Set A" is $7. The small bags will be packed together in large bags or boxes for shipping. To last month's list of extras, we have added Kainit, IIIb, and rectified Peruvian Guano, brand "Oneco," and thus include samples of all the more important kind of artificial fertilizers in the markets. The "Oneco" brand of guano differs in having a third as much nitrogen, and a good deal more phosphoric acid and potash, than the "Standard." No. IVa is a high-grade "ammoniated superphosphate." The pamphlet, with explanations and directions, which will accompany each lot sent, is prepared especially to tell what the farmers ought to know about the fertilizers and the experiments, and will describe at length the experience of farmers last season with similar ones. Blanks will also be sent for recording and reporting results.

Bee Notes for April.

BY L. C. ROOT, MOHAWK, N. Y.

In many locations bees, which have been wintered indoors, should be placed upon their summer stands this month. I can not too strongly warn persons against the common practice of removing bees from their winter quarters too early in our northern latitude. Unless the spring is unusually early, do not set them out until the first of May. The blossoming of the Soft Maple tree is a good indication of the proper time for each locality.

I am strongly opposed to the practice, so often advocated, of setting bees upon their summer stands before natural forage appears, and feeding to stimulate breeding, before the weather is sufficiently warm. Until this practice is discontinued, we shall be sure to suffer by what is known as "spring dwindling."

Many swarms of bees are placed upon their summer stands on April 1st, in fine condition, and before May 1st become so much reduced, that many of them never recover. When bees are taken out of the cellar, all ventilation should be closed, except at the entrance, and that should be contracted. Too much pains can not be taken to economize the heat. All openings in the top of the hives should be kept well closed. If movable comb hives are used, all combs, except those occupied by bees, should be removed, and a close-fitting division board be placed at the side of the combs left in the hive, thus contracting the space in the brood chamber in proportion to the size of the swarm. These directions apply also to hives that have been wintered out-of-doors.

The Parasites of the Honey Bee.

I have investigated this subject for two years past, and during the past winter have given it special attention. While examining the dust which is found upon the bottom-board under a swarm when wintering well, I discovered numerous minute insects. I have so far observed six different forms, but have not become sufficiently acquainted with them to determine whether or not they are all distinct. I have studied their habits, and the circumstances under which they are found, to such an extent, that I feel warranted in the belief that much of the uneasiness of bees in winter-quarters, and consequent poor success in wintering, is largely due to the presence of these parasites. My observations also indicate that the immature young bees which are often thrown from the hives during spring and summer, sometimes in large numbers, have been destroyed by these insects. These facts lead us very naturally to an explanation of what has been the greatest mystery and obstacle to bee keeping, viz., foul brood. I am decidedly of the opinion that both this plague, and its almost total eradication, are due to the operations of different varieties of parasites. Our experience with cabbage and currant worms, potato beetles, and other pests, whose devastations are sensibly checked by their respective parasites, corroborates this view. I find, upon a study of Packard upon "Our Common Insects," that the subject of parasites on honey bees has received considerable attention abroad, and that the cause of foul brood is therein attributed to the feeding of these parasitic insects upon the immature bees.

Weight of Swarms.

The amount of honey consumed during February, by the four swarms mentioned in previous months, is as follows:—No. 1, 1¼ lbs.; No. 2, 1¼ lbs.; No. 3, 3¼ lbs.; No. 4, (the swarm kept out doors), 4½ lbs.

Questions and Answers.

INTRODUCING QUEENS.—"When shall I introdnce Italian queens into black stocks?"....The best time is when swarms are being increased. Make swarms artificially, and introduce the queens to such swarms. If the entire apiary is to be Italianized, the queens in the old swarms should be changed later in the season.

LEAVING SWARMS QUEENLESS.—"Is leaving the swarm queenless 7 days in June, compensated for by the Italians working on red clover?" ...No. It is injudicious to deprive a swarm of a queen for this length of time at that season. With practice, queens may be introduced at any time during the working season, without depriving the swarm of a queen, except for a short time. When all circumstances are favorable, one queen may be removed and another replaced at the same time.

ADDING COMBS FOR BROOD REARING.—I would add combs to the center of the brood nest, and allow bees free access to them, and not cover any part, as suggested.

FEEDING SUGAR.—"Is not brown sugar cheaper than 'coffee A,' for wax making and brood rearing?" ...If pure, I prefer coffee A.

Science Applied to Farming.—XI.

Plans for Farm Experiments with Fertilizers.

"These experiments, it is true, are not easy; still they are within the power of every thinking husbandman. He who accomplishes but one, of however limited application, and takes care to report it faithfully, advances the science, and, consequently, the practice of agriculture, and acquires thereby a right to the gratitude of his fellows, and of those who come after. To make many such is beyond the power of most individuals, and cannot, therefore, be expected. The first care of all societies formed for the improvement of our science, should be to prepare the forms of such experiments, and to distribute the execution of these among their members.—ALBRECHT THAER, *Principles of Rational Agriculture.*"

I give herewith the promised plans for experiments, dividing them, for convenience, in three classes, some extremely simple, inexpensive, and easy; others more complicated and costly, but all useful.*

1.—Experiments Especially for Testing Soils.

Suppose a farmer wishes to ask his soil: "*What fertilizing materials do you most need in order to bring me crops?*" Or, to state it more fully: "*Of the ingredients of plant-food which my crops must have, what ones can you furnish from your own stores, and what ones must I give you to make up the deficiencies in your supply?*"—For this, I suggest an experiment, in which the three ingredients of plant-food most important from the agricultural point of view, viz.: Phosphoric acid, Nitrogen, and Potash will be used, each by itself; two by two, and all three together.

SET A.

Bag No.	Kind.	Amount.		Valuable Ingredients.
I.	Nitrate of Soda	20	lbs.	Nitrogen.
II.	Dissolved Bone-Black	30	"	Phos. Acid.
III.	Muriate of Potash	20	"	Potash.
IV.	Nitrate of Soda	15	"	Nitrogen.
	Dissolved Bone-Black	30	"	Phos. Acid.
V.	Dissolved Bone-Black	30	"	Phos. Acid.
	Muriate of Potash	20	"	Potash.
VI.	Nitrate of Soda	15	"	Nitrogen.
	Dissolved Bone-Black	30	"	Phos. Acid.
	Muriate of Potash	20	"	Potash.
VII.	Plaster	20	"	——

That is to say, on one plot a complete fertilizer would be used, contained in bag No. VI.; on another, the same, without nitrogen (bag V.); from a third, potash would be omitted; while on others, the ingredients would be applied each by itself. Nitrate of soda is chosen as the best single material, except, possibly, sulphate of ammonia which could be used also, to test the specific effect of nitrogen; and because nitrate of soda, like sulphate of ammonia, is a thing that our farmers ought to become better acquainted with. For phosphoric acid (soluble), dissolved bone-black, and for potash, the "muriate" is selected, as these are among the cheapest and best forms in which the respective ingredients can be bought.

The seven bags of Set A, for one-tenth of an acre each, will, with one other fertilizer, and two unmanured plots, suffice for an acre. For the other fertilizer, I would suggest yard-manure, unless "Extra" No. XIII., nitrogen and potash, with no phosphoric acid, can be bought. This would have been put in Set A but for the cost. Set A, with No. XIII., makes the same series as is recommended by Wolff "as a test, both of the needs of the soil, and of the hight to which the yield at harvest can be raised, under existing conditions." He says:

"It is of the greatest importance to the farmer to find out which of the more important ingredients of plant-food his soil, in its actual condition, fails to supply in sufficient quantity for the production of the largest possible crops, and which, when directly added, would therefore exercise an especially favorable and profitable influence.—This can be done, practically, only by properly conducted fertilizing experiments.....The trials should be made on land which is exhausted, in the agricultural sense of the word, and would, in ordinary practice, have been again dressed with stable-manure."

In addition to the regular set, it would be well to try several "extras," particularly Peruvian guano and fish, and with them, other fertilizing materials. The value of Mr. Bartholemew's experiment, described in February, was very much increased by the trials with ashes, leached and dry, and the manures produced on the farm.

The "Natural Strength" of the Soil to be Tested.

The soil is not like a cistern, which we may pump dry, and must then fill up again before it can be of use. It is rather like a pond, which may be drained very low, but whose supply is being continually renewed. This continual re-supply of plant-food is the most important feature of its "natural strength." The natural strength of most of our soils suffices only for very small crops. The crop can not rise above the level of the lowest ingredient in the food supply. The proper use of commercial fertilizers, like guano, phosphates, potash, salts, and the like, is to fill up the gaps. In a soil that has a store of available plant-food, accumulated by natural processes, or left over from previous manuring, the specific effect of the experimental fertilizers will not be so clearly marked, and we shall not be able to tell so well what we may expect from it.

2.—Experiments to Test Especially the Action of Fertilizers.

Some may wish an answer to such a question as this: "*Of the different fertilizers to be had in the markets, what ones, if any, can I use to advantage, and which will be most profitable?*" For this purpose, Set A entire, or Nos. I., II., III., and VII., separately, any of the extras, and other articles can be used. But where calculations in dollars and cents are wanted, the utmost care should be taken to make the experiments accurate.

I wish to call especial attention to nitrate of soda, Peruvian guano, fish, bone, and potash salts. Nitrate of soda furnishes nitrogen, about 16 per cent, in form ready for immediate use by the plant. It is excellent for a top-dressing for grass and grain, especially in spring to bring up backward winter wheat, or encourage the growth of grass on pastures, meadows, and lawns. It is used in immense quantities in Europe. A gentleman whom I happen to know as one of the best farmers in Germany, says that he considers it "a sin to try to grow oats without nitrate of soda." Sulphate of ammonia is similar in action to nitrate of soda, and less exposed to loss by leaching out of the soil, but, on the whole, I think no better, if as good, in its practical effects.

Peruvian guanos, as now sold, taking into account composition, quality, and price, are the cheapest class of fertilizers in the market. There are different grades, furnishing nitrogen, phosphoric acid, and potash, in varying proportions, and adapted to the varying wants of different soils and crops. Fish rivals guano in cheapness of nitrogen and phosphoric acid, and, when rightly prepared, is often preferable to anything else. I hope that numbers of experimenters will try Peruvian guano and fish.

Fertilizers for Special Crops.

Hundreds of farmers near cities and villages, grow potatoes, onions, and other vegetables, for market. Very often the addition of some special fertilizer, like potash salts, to the other manures used, will increase the crops wonderfully. A gentleman recently told me of a case in point from his own experience. A near neighbor and himself were raising onions last season on similar soil. Each one of them treated his crops in the same way, except that he used sulphate of potash, his neighbor did not, and he got several hundred bushels more of onions on the same area. A few dollars invested in the potash salts, increased the market value of his onion crop by $200 or $300. Cases like

[* See page 129, for list of fertilizers, cost, etc. Detailed explanations of points farmers will want to know about, with directions for making the experiments, will accompany each lot sent out.—ED.]

this are very common with potatoes and other vegetables. I would recommend experiments on such crops with potash salts, either with Sulphate of Potash,(*Ia*); "Muriate," (I); and Kainit, (*Ib*), side by side, to test the action of each, or with the Sulphate alone. Similar experiments will often be useful on grass, grain, corn, and clover. For these the "Muriate" (I) may do as well as the Sulphate, (*Ia*), and is cheaper. In like manner, bone, raw and superphosphated, Nos. VIII. and IX., can be tried wherever the farmer may desire.

These experiments, whose object is more to test the fertilizers than the soil, may be made on soils in better condition than would be appropriate for those of the first class for testing the soils. But it must be borne in mind that in no experiment will the first year's crop tell the whole story; that the after effects are important; that the crops of succeeding years will have something to say, and perhaps something different. Indeed, this is true of all the experiments, and to make them complete they should be continued through a series of years and crops. At the same time, a good deal may be learned from the first season's results, and I think those who do them rightly, will be more ready for the repetitions than they were for the first trials.

Experiments for Obtaining More General Information.

The inferences from field experiments are of general value in proportion as the questions are specific, the plans appropriate, and the trials made under known and specified conditions, in varying circumstances, with different crops, and through series of years. To the large amount of useful information obtained from field experiments, a great deal more can be added. For instance, corn is one of our most important crops, and is becoming more and more so in Eastern and Southern States. But farmers, in those States, must depend largely upon artificial fertilizers for growing corn. What materials and mixtures can they best use? It is, of course, foolish to talk of prescriptions to fit all cases, but nobody knows now just what will be best for any case. The fact is, that the knowledge we have of the feeding capacities of corn, its power to obtain its food from soil and air, how different fertilizers and other circumstances affect it, knowledge of the definite sort that comes from accurate experimenting, is extremely limited. But by a series of experiments carried out in a number of places, with uniform manuring, seed, and tillage, and accurate descriptions of soil, weather, and other conditions, we might learn a good deal that would be valuable. Take, for instance, as the main question, the nitrogen supply; how much capacity corn has to get it from the soil, and how it will best be supplied in manures. We might use (1,) the fertilizers of Set *A*, which would give a test of the soil, and to some extent of the fertilizers also. Then (2,) to test the effects of nitrogen alone in different combinations, apply, along side of I, Nitrate of Soda, *Ia*, Sulphate of Ammonia, and *Ib*, Dried Blood. To test the action of nitrogen with other fertilizers, we could start with the mineral manures, V, (phosphoric acid, sulphuric acid lime, and potash) as a basis; and (3) try the effect of varying qualities of nitrogen by adding to these nitrate of soda, at the rate of 100 lbs., 200 lbs., and 400 lbs., per acre, on successive plots; and (4,) the effects of nitrogen in different combinations by adding sulphate of ammonia, and dried blood on others; and using Peruvian guano,and fish, each with potash salts, and finally stable-manure on still other plots. This would make, with three unmanured plots, say twenty in all, for which the fertilizers might cost as many dollars, an experiment but little more difficult or costly than farmers often make, and one that educational institutions and public-spirited individuals might unite with most valuable results. Of course similar plans could be devised for other crops, as is being done to considerable extent of late by the European Experiment Stations.

I make this proposal with the more assurance, because several professors and farm superintendents in our agricultural colleges, and public-spirited farmers, have expressed to me their desire to co-operate in such experiments. It was, indeed, through the solicitation of one of the institutions referred to,that I was led to bestow especial thought to the subject. I should be pleased to correspond with any who may be interested to join in such an enterprise.

W. O. ATWATER,
Wesleyan University, Middletown, Conn.

Plants May Thrive on a Meat Diet.

BY PROF. ASA GRAY.

After it was ascertained that Sundews and Venus' Fly-traps digested insects as well as caught them, it was still a question if it did them any good. We ourselves see no difference between supplying combined nitrogen to the roots in the form of manure, and to the leaves of such as are capable of imbibing it, in the form of fresh animal matter. And we could never be brought to believe that such peculiar organs and peculiar actions went for nothing, or served no purpose useful to the plant itself. Such an idea would, to our thinking, border on the atheistical. But some very good people were free to express such an opinion; and some made what they called experiments or observations; from which they concluded that such plants fed with insects, or with bits of meat, or allowed to help themselves to the former, were no more vigorous than those from which every thing of this sort was excluded.

Now Mr. Darwin's son, Francis, has put this to the test by careful and decisive experiments. At the beginning of summer, he put 200 plants of common Round-leaved Sundew (*Drosera rotundifolia*) into wet moss on soup plates,divided each plate into two halves by a partition, fed the leaves of the one-half every few days with little bits of meat; left those of the other half without any, and, covering all with gauze, prevented them indulging in the capture of insects. Before long it was clear that the fed plants were profiting by their meat diet. That is, they were perceptibly more vigorous in growth and of a better color; and in time they produced more flower-stems, and larger ones, as well as more leaves. And, what is still more decisive, they bore a larger crop of seeds, and heavier seeds. The exact result as to the crop is recorded in the following table, where the numbers and weights are put into the form of percentage. The first column of figures is from the starved; the second from the fed plants:

	No Meat.		*Meat Diet.*
Total number of flower-stems.....	100	:	121.5
Sum of the weights of these.....	100	:	164.9
Total weight of these.....	100	:	231.9
Total number of pods produced.....	100	:	194.4
Average number of seed per pod....	100	:	122.7
Average weight per seed...	100	:	157.3
Total calculated number of seeds produced.....	100	:	241.5
Total weight of seeds produced.....	100	:	379.7

As it is to the seed that assimilated nitrogen mainly and finally goes, being "put where it will do most good," these last figures are most significant; and the bearings of these facts upon vegetable physiology are noteworthy. Anyhow, it is clear that such plants do not catch flies for naught, or out of mere naughtiness.

Those Important Farm Experiments.

Every farmer, who possibly can, should take a hand in the important experiments announced last month, and further described now, on page 130. They may be worth hundreds of dollars hereafter to every one who tries them. The actual outlay need not be over $7 for fertilizers, with a trifle more for freight, while a considerable proportion of this, if not the whole, or more than the whole, will *be quite likely to be returned the present year*, by increase of crops on the experimental acre. Let us re-state the proposal here as plainly as may be:

Naturally poor soils, and those which have been cultivated or worn, have lost one or more elements of fertility. We can not *see* what is missing, and an analysis of the soil will not inform us definitely. It is now pretty generally agreed that the lacking element is one, or more, of the following: POTASH, or NITROGEN, or PHOSPHORIC ACID, or LIME, or, perhaps, SULPHURIC ACID. One soil or crop differs from another in what it lacks. Barn-yard manure supplies all the elements. So do some of the compound manufactured fertilizers; but there is seldom enough yard-manure on any farm for its necessities or its best profits.—We may buy a compound fertilizer, having equal parts (in cost) of four of the important elements; yet if only one of these is needed by the soil, we throw away $3 out of every $4 paid, besides the labor and cost of handling. Millions of dollars have been lost by our farmers

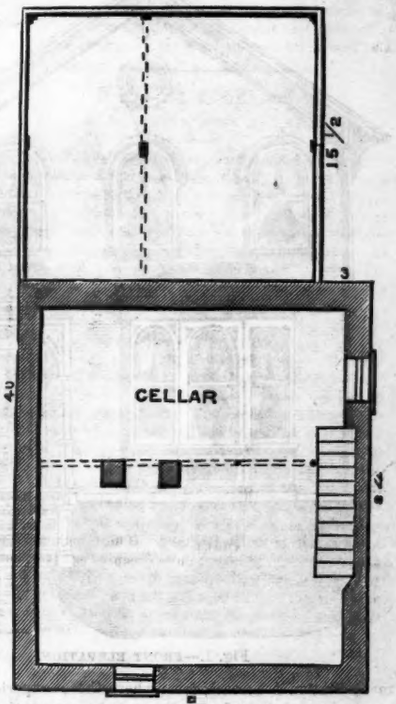


Fig. 2.—PLAN OF CELLAR.—(*See page* 132.)

in this way; millions more by buying and using fertilizers that, however good of their kind, did not happen to contain just the element wanted, and other millions by not getting the article paid for.

THE REMEDY.

The plan, in brief, is this: The farmer selects an acre of land as nearly as possible like the rest of *his* soil. This is to be laid out in ten long plots. Upon some of these plots are to be applied certain single fertilizers; on others, two of them or three of them together. Two or three plots among the others are to have no fertilizers applied. Now, *across* these plots are planted, or sown, strips of corn, potatoes, grain, etc., the crops most raised by the experimenter, and, therefore, most desirable to have tested.

It will at once be seen that by watching these crops where they cross the various fertilizers, we will get a direct answer as to what THAT soil needs for each crop put upon it. For example, if the corn on the potashed plot is just as good as on the plot having potash, phosphoric acid, and nitrogen, we shall know that it is a great waste of money to buy costly phosphates and nitrates for such a soil and such a crop. If any one or two fertilizers show a good profit in their use, as some of them doubtless will, we shall know *what* to use next year and thereafter on a larger scale.

The great advantages of the scheme, as proposed, are these: 1st. The fertilizers sent out are all to be tested for quality, purity, percentage of each element, etc., by Prof. ATWATER.—2d. They are to each be weighed, and sent in separate bags, ready to be used on a tenth of an acre—a plot 16 rods by 1 rod, or otherwise. 3d. The fertilizers will be supplied at a price just to cover cost of preparation, bags, etc. No one is to make anything out of it. (This Journal will make a loss in trouble, etc., but a *gain* in the general information

that will thus be gathered by its readers and the public.)—4th. Pamphlets prepared by Prof. ATWATER will be sent with each parcel, giving full and specific directions for making the experiments, and ascertaining the results.—Finally: as before stated, this project carries an "Agricultural Experiment Station" to each farm where these experiments are tried, and supplies to the owner the information *he* wants, at small cost, if any—perhaps a profit. Neighboring farmers having very similar soils will also be benefited.

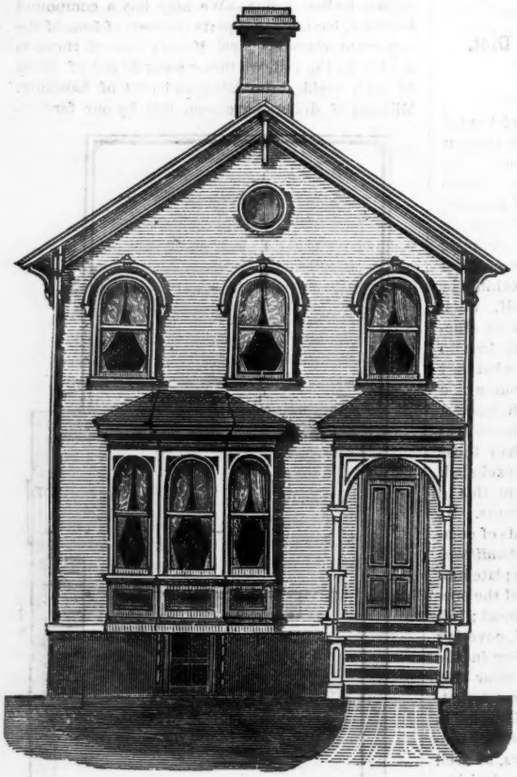


Fig. 1.—FRONT ELEVATION.

A Cottage, Costing $800 to $1,050.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This design is an enlargement of the small cottage described on page 92 (last month), and the two plans and their descriptions should be read together, to best understand them. The arrangements are very complete in convenience, appearance, and economy.....**Exterior,** (fig. 1).—The outlines and style are simple. The front is enlivened by the Porch, Bay-Window, and other projections. The details of finish are of neat design, and in harmony, giving an agreeable expression of taste and refinement—features especially pleasing in cottage architecture.....**Cellar,** (fig. 2, placed for convenience on page 131).—Hight in clear, 6½ feet. It is under the main building only; has two windows, and stairs leading to the first story. It contains 378 feet area, giving abundant room for all ordinary requirements....**First Story,** (fig. 3).—Hight of ceiling, 9 feet. The best use is made of the space, by having but few divisions, leaving the rooms of good size. The Hall is small, but is conveniently arranged to answer all necessary purposes. It is entered from the front porch, and communicates directly with the parlor and dining-room, and by the main stairs with the second story. There is sufficient room for a hat-rack at the right of the front door. The Parlor is of fair size, and the large bay-window adds materially to its area and cheerfulness. With very little expense in furniture, this apartment may be made pleasant and cosy. The Dining-Living-Room extends the whole width of the house, with a window at each end. It is conveniently arranged, with doors opening from the hall, parlor, kitchen, pantry, and to the stairs. [We suppose this room is to be warmed by a stove, having pipe entering the chimney shown in the parlor only. The arrangement for chimney for the kitchen was described last month.—ED.] The Kitchen is commodious and pleasant; has three windows, an outside rear entrance, and adjoins the dining-room, pantry, and bed-room. The Pantry is sufficiently large and convenient to answer the requirements of both dining-room and kitchen. It has a small window, and is thoroughly shelved. The Bed-room opens directly from the kitchen. Its purpose in the partial erection (as shown last month) may be changed in the completed building here described, by making it an auxiliary of the kitchen for the coarser work; or, if needed, it may still be used as a bedroom for help....**Second Story,** (fig. 4).—Hight of ceiling, 8 feet. There is a hall, two chambers, two bedrooms, and two closets in this story, and no waste room. The Hall is just large enough for convenience. The Chambers are of ample dimensions, with a chimney between them, admitting the use of stoves when required....**Construction.**—The Foundation for the main house is of broken stone, and mortar, showing 3 feet above ground, neatly pointed where exposed to sight. The Wing is supported on piers, as described last month. Girders, (shown on the cellar plan by dotted lines), supported on strong posts, carry the central portions of the building. The shortness of the spans between bearings, allows very light floor beams. It is, however, important that the beams should be *bridged* to secure uniformity of strength, and prevent vibrations. The Frame is constructed in the usual manner—all the ties, girts, and headers, being "framed in." The inclosing is sufficiently indicated in the estimate. The front windows have semi-circular heads outside. In their construction the frames and sash are square, to admit ordinary curtain fixtures on the inside. The circular head is outside of, and "planted" on the flat casing, or "blind strip," and is made perfectly tight by a flange of tin. The additional expense of such circular finish is but trifling, compared with its good appearance. The side and rear windows have square heads, with rebated drips. Blinds are intended for all windows above the cellar. Ventilators are placed in each gable. The Porch has boxed pedestals, and columns, scroll-sawed balusters, and circular spandrells. The inside walls and ceilings are "sand-finished" on two coats of brown mortar. The main stairs are constructed with a quarter circle, and winders at the top. These winders extend beyond the hall into the ceiling of the dining-room, (as sketched), but do not interfere with its use, or seriously injure its appearance. The Bay-Window is neatly arched on the inside. Marble mantels are put in the parlor and dining-room, and shelves in the chambers. The second story hall is lighted through the door (sash) of the front bed-room.....**Suggestions.**—This plan was arranged to suit a village lot 25 feet in width, leaving a passage-way at the side. This necessitated placing the wing at the rear of the main house. If there is more ground, the wing may be placed at the right of the main part, facing the road. The communications between the dining-room and wing, would still be similar to those shown. The window at the right of the dining-room would be placed in the rear. These changes entail no extra expense, if determined on before commencing to build.

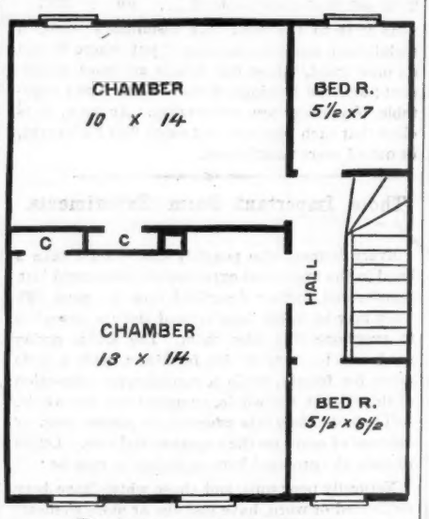


Fig. 4.—PLAN OF SECOND FLOOR.

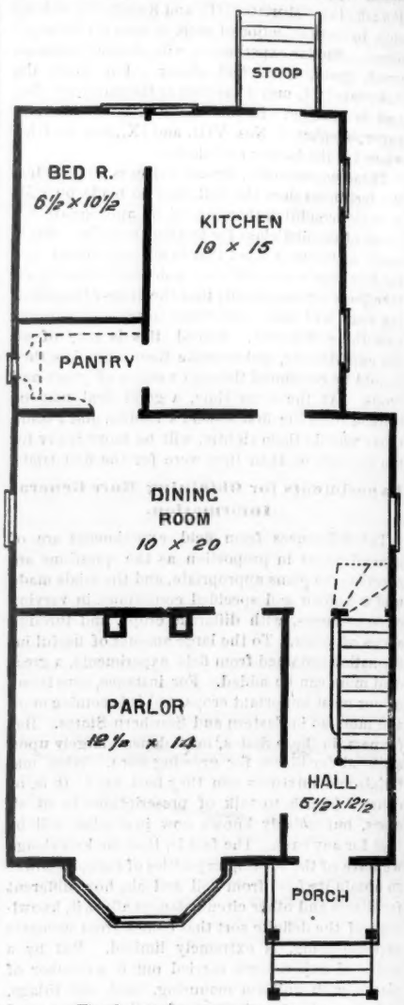


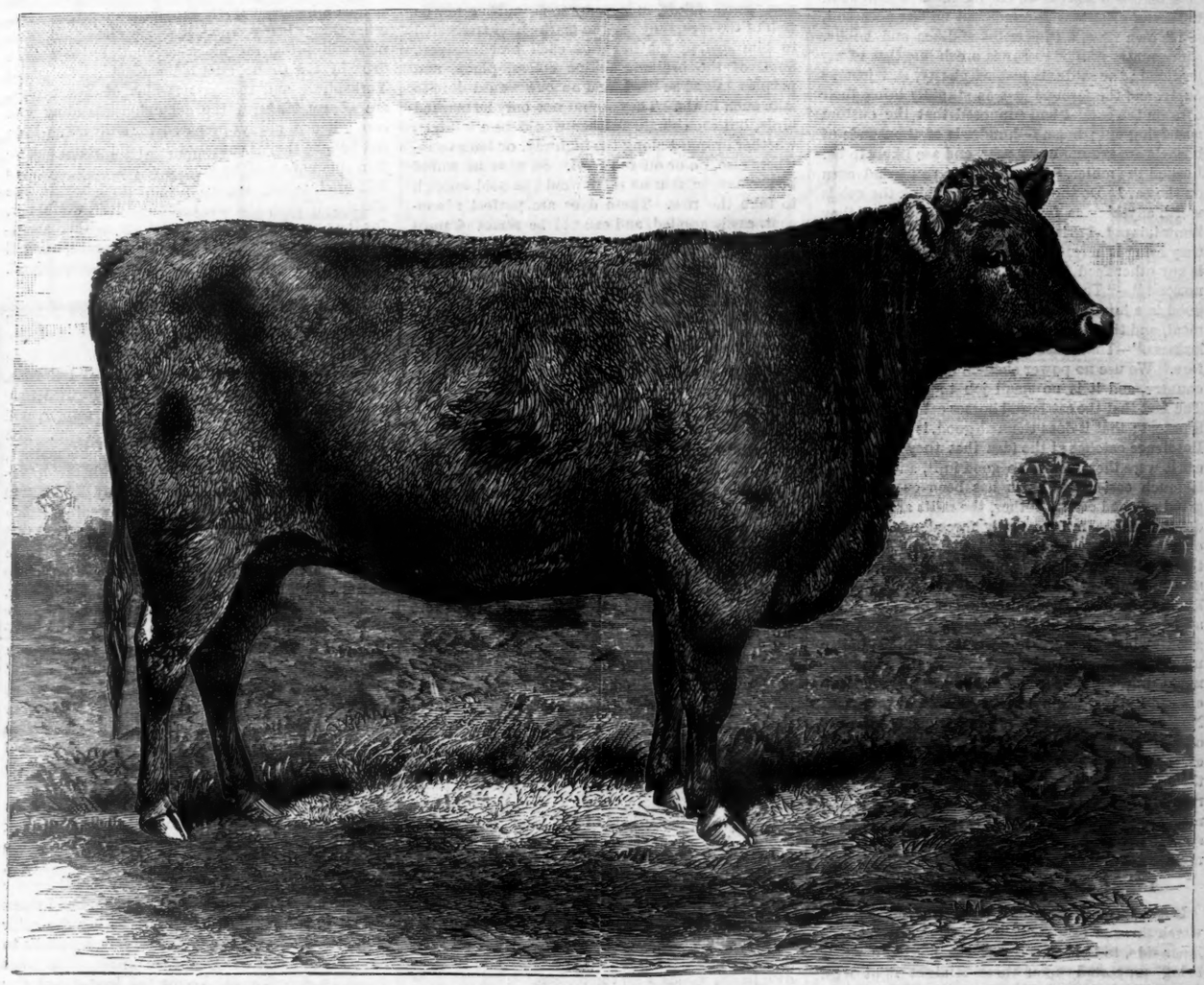
Fig. 3.—PLAN OF FIRST FLOOR.

Estimate, cost of materials and labor for main house:

56 yards excavation, at 20 cents per yard	$ 11.20
875 feet stone foundation, at 5 cents per foot	43.75
2000 brick, (furnished and laid), at $12 per 1,000	24 00
340 yards plastering, (complete), at 25 cents per yard	85.00
1126 feet of timber, at $15 per M	16.89
2 sills, 4x6 in. 24 feet long. / 2 sills, 4x6 in. 21 feet long. / 2 ties, 4x6 in. 24 feet long. / 4 ties, 4x6 in. 21 feet long.	4 posts, 4x6 in. 19 feet long. / 2 plates, 4x6 in. 24 feet long. / 1 girder, 4x6 in. 21 feet long. / 22 beams, 3x6 in. 24 feet long.
250 wall strips, at 11c. each	27.50
162 siding, (9 inch), at 20c. each	32.40
Cornice materials	18.00
135 shingling lath, at 5c. each	6.75
8 rough planks, at 20c. each	1.60
24 bunches shingles, at $1.25 per bunch	30.00
112 flooring, (9 in.), at 25c.	28.00
2 cellar windows, (complete), at $4	8.00
1 bay window, (complete), at $40	40.00
5 plain windows, (complete), at $12	60.00
Stairs, (complete), $10; 12 doors, (complete), $96	136.00
Mantels, $39.91; Porch, $30; Closets, $10	79.91
Nails, $9; painting, $50; Carting, $12	71.00
Carpenter's labor, (not included above)	80.00
Total cost of main house	$800.00
Add last month's estimate for wing	250.00
Total for whole complete	$1,050.00

The Duchess of Hillhurst 3rd.

Another notable Duchess has made her mark in the world; and it is one of American lineage and birth. This is Duchess of Hillhurst 3rd, a Shorthorn heifer owned by Mr. Loder, of England, but bred by Mr. Cochrane, of Hillhurst, Canada, and purchased by her present owner at a recent sale of imported stock in England, for 4,100 guineas, or $21,525—a remarkable price for so young an animal, scarcely more than a calf. It is possible that she, as an article of merchandise, is worth all she brought. Breeding animals are not to be justly valued by the price of beef or of milk, and if one of her progeny should turn out to be as valuable a breeder as one of her related race, the Duke of Airdrie, which has the deserved reputation of being the parent of more valuable animals than any other bull, and by far the best Shorthorn bull ever seen in America, the price may well be considered as moderate, even in these depressed times. This animal has been universally accepted as a model Shorthorn, and certainly no one can refuse to admit, at first sight, that she possesses, in perfection, all the beauties of this fine race. Her form and features are perfect, and are admirably represented in the colored print from which the engraving was made. This print is given in an extra sheet by the "London Agricultural Gazette," a journal which has done good service to the Shorthorn interest, in steadily opposing the delusive style of picturing animals, which has, unfortunately, become so popular, both in this country and in England. While our engraving can not give the color of the animal—a rich red—the outline is a tracing of the original, and represents the form of the heifer with exactness. The sire of the heifer is Duke of Hillhurst 2nd, a descendant of the Hillhurst herd, owned by Mr. Cochrane of Canada. The branch of the Duchess family, to which this animal belongs, is much more vigorous and productive than the pure Duchesses, and is, in fact, the only offshoot of the family which continues to increase in number. Unfortunately this Airdrie branch has been almost entirely lopped off from this side of the Atlantic, so that but one pure descendant of this important family, and that as yet unproductive, remains in America.



SHORTHORN HEIFER, DUCHESS OF HILLHURST 3RD.—*Drawn and Engraved for the American Agriculturist.*

The Exportation of Horses.

Several hundred head of horses were sent to Europe last year, and recently a number were shipped through the agency of Mr. Stoddard, of 626 Greenwich St., New York. This, we believe, is the first shipment from New York, and is the beginning of an important business which must grow to large proportions in the course of time. We have a class of horses that are admirably fitted for cavalry purposes, and for road uses. For this we have to thank the breeders of trotting horses, who have, during many years of careful improvement and training, supplied the country with a most useful class of animals. The racing horses of Europe can not compete with our trotters, either for the road or for the purposes of war, and now that the value of our horses has been discovered, we look for a permanent market for them in Europe. The frequent European wars call for a large supply of horses, to be kept on hand even in times of peace, and in war the consumption is very great. Every few years, European journals are alarmed at the scarcity of horses, and just now the English people are anxiously asking where a supply could be procured for their cavalry, in case of war. In this event there would certainly be a demand for our animals, larger than we could supply, and in any case it is probable that all of our surplus stock will find ready and profitable sale in foreign countries.

In view of these circumstances, it would be well for us to consider how we can improve our stock, so that farmers may be able to take a share of this business. It has been too frequently the case that farmers have not only begrudged the cost of the services of a good sire, but they have also reserved for breeding only the poorest of their mares, lest the better ones might be forced to lose a few weeks work in the spring. Spavined, wind-broken, worn-out mares, have been used for breeding, until a vast number of horses are constitutionally prone to disease, and are of little value from their birth. It costs no more to raise a good colt than a poor one, and if farmers would keep a good brood mare or two, and would secure good sires, a mare might be made as profitable in her increase as two good dairy cows, without considering the value of her work, which, at the least, will pay for her feed. It is an established fact, although it may seem at first sight to be an anomalous one, that the more we substitute railroads and steam-engines for horse-power, the greater demand we create for the services of horses. Horse-power is, after all, only a feeder for steam-power, and the more steam-power we use, the more horse-power we shall need to supply it.

Among the Farmers.—No. 27.

BY ONE OF THEM.

Corn and Cob Meal.

Well do I remember, as a youngster of nine to eleven, how I delighted to be perched upon Old Gray, between and upon sundry bags of corn and rye, or wheat, and started off for the mill. I could fish until the grist was ground, and no boy ever had, in his own view, a choicer lot of lines and hooks. The country mill of to-day is much like that of my boyhood; the miller is just as chatty, and just as dusty, and the farmers just as stupidly bring their corn on the ear. I had supposed that the custom was dying out; but no—hundreds of thousands of bushels are ground every year, and are likely to be. I asked the miller, "How is it that you grind corn on the ear? Do the farmers really think the cob is worth anything as feed?"—"No," said he, "they know it is not. I grind thousands of bushels, because they bring it here, but they never *buy* any, if there is any other feed they can buy."—"What is their notion?"—"They know that there is not as much good in a hundred bushels of cobs as in a pint of meal, and they have the cobs ground from sheer laziness."—That reason never occurred to me before. We use no power shellers in this part of the country, and it is no small job to shell by hand. The fact that the cattle and horses eat the cob meal, is patent; that it does them no good, is not so clear. Indolence catches at the idea that they would not eat it were there not some good in it, and so, as it is much easier, and as it has been customary to grind cob and corn together, the mills are made to do it, and the millers really forced, against their own good sense, and against their will, to grind them. I have no doubt it is true that corn and cob-meal fed pure—that is, simply "wet up,"—is less likely to do harm than pure Indian meal; but fed as it ought to be, it is certainly less likely to do good—which is more important. I think Indian meal never ought to be fed to cows, or any ruminants, unless in the form of a thin gruel, which farmers call "slops," or upon cut hay, straw, or chaff. Now rye straw is somewhat nutritious, and really of some benefit to the beasts, whereas the digestion of corn-cobs, which the animals are forced to go through with, is a tax upon their systems that results only in harm, except in so far as the mechanical distension of the stomach offers a similar advantage to that secured by feeding meal upon straw or hay. I saw at the mill a very

Light and Handy Bag-Holder.

It was made of a crooked branch, **U** shaped, into which three or four sharp hooks were driven on the inner side, to hold the top of the bag; the whole being supported upon three straight light legs. Almost any old orchard will furnish branches out of which similar pieces of wood might be cut and shaped. Such things are very handy, now and then, and upon large farms it is well enough to have a plenty of them, but on such a farm as mine they are in the way. I have "tinkered up" many a handy contrivance, which never was used half a dozen times, and which, for years, was either under foot, or taking up valuable space somewhere, until it was made into kindling-wood. Two little hooks, set in one side of the fanning mill, to hang the edge of the bag on, is the most convenient bag-holder for people who need one so little as we do.

Stealing Poultry—Marking.

Nothing is more exasperating than the loss by theft of one's choice poultry. We are not particularly liable to have pigs and sheep stolen, and it is still more rare to hear of a young "beef critter" being found missing from some mountain pasture. I can sympathize with those farmers of the South, who have not only poultry, but pigs, no matter how choice, made off with, and do not blame them for making no more efforts to introduce choice stock, especially when the well-bred stock are more easily caught than others. This is certainly true of some kinds of poultry. All the Asiatics, Dorkings, Plymouth Rocks, and the French fowls, are more easily caught than other breeds. Hamburgs, Leghorns, Games, and some other kinds, are scary and noisy—thus they alarm the dog and the owner.

A friend of mine, on Long Island, has had his choicest Brahmas twice selected out carefully by thieves, breaking up his breeding pens, and putting him, of course, to heavy loss and much perplexity. It is very difficult to trace such a theft, for only the owner knows his own birds, and they can not be described so that another person can readily recognize them—unless, indeed, by some cutting of the web of the toes, they may be marked. I suggested to him dyeing the fowls of each breeding pen. Some of the brilliant aniline colors, pinks, and purples, might be used, and no one would dare to take such fowls. They would not only be marked birds, but each single feather would be a tell-tale, whether dropped along the highway, or found anywhere else, on or off the fowl. So obvious would be the danger, that no thief would be bold enough to take the risk. These dyes are perfectly innocent, easily applied, and can not be removed until the fowls moult.

Blood and Breeding.

Changes in form in domestic animals are brought about with more or less rapidity through circumstances under the control of the breeder. Structure, established by generations of careful breeding, with certain objects in view, is characteristic of any fixed breed or type of animals. The moment the surroundings change, and the system of breeding, (that is, selection of breeding animals), which has formed or maintained certain structural peculiarities, is given up, the progeny change back (revert) or take on changes adapted to their new conditions of life. An interesting, though by no means unusual or surprising fact, has lately been brought to my notice, showing how rapidly this return to the feral, or wild condition, changes structure. A gentleman of this vicinity sent to Virginia a pair of carefully bred Berkshires, with remarkably short faces, and otherwise of approved shapes—broad and level, with well developed hams and shoulders; low set, with small offal, fine-haired, etc. The progeny of this excellent pair have since been bred together, a portion of them being kept confined, the others allowed to run at large in the woods, and take their chances with the "Razor-backs" to the "manner born." The result is, that those bred in confinement, and, so to speak, *luxury*, have still short faces, and other characteristics of well-bred Berkshires; while the others of the later generations, though just as pure as to blood, have changed greatly; fallen off in size somewhat, have straighter and longer snouts, are getting slab-sided, and gradually approximating the half-wild type.

Another fact seems to be proved, which rather surprised me, and yet should not. It is, that even these partly reverted Berkshires do not hold their own in the woods with the natives. That they are not so prolific, and do not make so much pork, and even the pork is not superior, unless the pigs are taken up and fed a little while before killing.

The delicacy of Virginia mast-fed hams is well known; their excellence arises from two or three distinct causes. One of these is the health of the pigs; another is the fact that, during much of the year, it is, "root, hog, or die!" and then, when the woods are full of chestnuts, chinquapins, acorns, and other mast, they pick up a living very easily, and fatten up a little—enough to make their flesh juicy and tender before killing time; and another cause, undoubtedly, is that this food is sweet, wholesome, and both it and they far removed from their ordure. If it be really true that for this wild life, the native hog is the most economical producer of pork, and that the pork is of the best quality, it is time that we knew it, and it would pay somebody to undertake the demonstration.

Pigs in the California Drouth.

An old friend, for some years a resident of Santa Barbara Co., Cal., writes me, that before the close of the terrible drouth, which for more than a year afflicted that region, most of his pigs had succumbed, the few which survived were valued, of course, for the particular quality of being able to live on "faith and a promise," without much, if any, more substantial provender. My friend wishes to know which breed of swine will thrive best on this diet. What kind of pigs live on the least food, and on coarse food. I believe that, as a rule, the wild, or half-wild pigs can bear hunger best, yet when they get a chance, they eat voraciously, but do not fatten. The most improved breeds, the small Yorkshires, for instance, live on the least amount of food, and if they get a surplus—that is, more than enough to sustain life—they lay it up against a hungry day, in the form of fat, so that, other things being equal, it seems clear that such pigs will prove the most economical where long drouths are to be guarded against. The small Yorkshires, and the best strains of Essex pigs, are *always* fat with the commonest feeding and care; hence, always prepared for a drouth. I do not believe the "Landpikes" would stand starvation commons half so long, and am sure that the half-bred, or half improved cross-bred breeds, like Chester-Whites, Durocs, Poland-Chinas, would not, for they require more food, and are neither accustomed to occasional protracted abstinence, nor will they keep fat upon ordinary non-fattening food.

Irish Butter.

Our village doctor was for many years a surgeon in the navy, and he tells me that all navy men, and officers of the merchant service also, who have occasion to lay in stores for use in hot latitudes, select Irish butter, and that this, bought with only the ordinary judgment of the mess caterer, will keep sweet and flavorous around the world. The best butter they can buy in the Philadelphia market, will keep but a little while at sea, while the dollar-a-pound butter of the famous Jersey dairies, will hardly keep sweet ten days in warm weather. We have enough Irish dairymaids in this country to test the matter pretty thoroughly, and find out if it is in the making, in the grass, or in the kine. The cream of different breeds of cows makes butter, which varies in keeping quality, as much as it does in color—and I am by no means sure that the paler kinds of butter do not uniformly prove of the best keeping qualities. There is, in my mind, a great distinction between pale butter and butter which has lost its color. The cream of a pure Jersey, or even Guernsey, herd, may be "whipped to death" in the churning, and the butter "come" colorless and sickly-looking—whereas the same cream, properly churned, might produce beautiful yellow butter. The pale tint is certainly not the natural color of the butter. The best keeping butter in the New York market, has more or less color, according to the time of the year, but it has a fair color, and is never, perhaps, very pale. I would not say that the paler butter is, the longer it is likely to keep, but I think that the highest colored butter, whether the color be natural or artificial, is not nearly so likely to keep as well as the paler kinds. No doubt salt has much to do with the keeping of butter, and our dairy people can not be too careful in this respect. It is perhaps a question whether the purest salt is the best. Certainly an ounce of saltpeter to the pound of salt, ground together, and used just as pure salt would be, not only has no bad effect, but undoubtedly imparts a keeping quality superior to pure salt, [which we do not admit.—ED.] Sugar is a well known and powerful antiseptic, and has been used for keeping butter with good effect, the quantity being not sufficient to impart perceptible flavor, say one or two ounces to the pound of salt. I find that packers of summer butter, which is intended for winter use, put about one ounce of salt to the pound of butter. We never salt so heavily in making for our own use, as we do not enjoy butter made with more than half the above named quantity. Last summer we employed

An Irish Dairymaid,

at least a young woman newly-arrived, who had been bred to the work of the cow-byre and dairy. She made excellent butter, following the usual course, except that she worked the butter *only once*, first working out the buttermilk, washing a little, and then working in what she called *dissolved salt*—that is, fine salt mingled with water, which of course dissolved a good part of it. This salt and brine was, to a great extent, taken up by the butter, and the water, subsequently, but during the

same operation, worked out. We usually work out the buttermilk, salt, and after eight to twelve hours, work again, and thoroughly. Her butter was excellent, and kept well—rather better, perhaps, than if it had been worked twice in the usual way; for there is such danger of breaking the butter globules, that it is better to err on the side of hardly working enough, than to work it too much. It takes considerable hard work to make the butter *appear* greasy, from the broken butter globules; yet, doubtless, a few globules break very easily in the operation. We all know that greasy butter will not stay sweet; hence, the problem is, to remove the buttermilk, with the least possible working.

It is only a few days ago, that a gentleman who used to live at Antigua, in the West Indies, was at my desk, on some business, and stated that the best butter ever received in those hot ports was Irish butter; that it was never, in his experience, other than sweet, and excellent, and that after a firkin was opened, it kept until it was consumed.

Talks on Farm Crops.—No. 14.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

I anticipate great things from Prof. Atwater's Farm Experiments. That was a grand idea, putting up small packages of different manures of known composition, and letting farmers try them on different soils and on different crops. I hope the good work will be continued, with such changes as experience shall show to be necessary. And I hope in all cases one or two plots will be left without manure of any kind. [Of course the writer did not know of our plan for Experiment Stations all over the country, given last month on p. 86.—ED.]

Indian corn has long been, to me, one of the mysteries of our agriculture. It is a grand crop. In chemical composition, Indian corn and wheat closely resemble each other. And yet, on a great variety of soils, without manure, one acre of Indian corn will yield double the amount of produce as an adjoining acre sown with wheat. In other words, it is as easy to grow 30 bushels of shelled corn per acre, as 15 bushels of wheat per acre.

I think the rule would hold good on a great many farms in this section. It is due probably in some degree to the fact that Indian corn grows later in the season, and during very hot weather. It takes up from the soil, and evaporates through its leaves, an immense amount of water, and consequently is able to take up a much larger quantity of nitrogen from the soil. If land, in good condition for wheat, with season favorable, produces 15 bushels of wheat per acre, I think the reason it does not produce 20 or 25 or 30 bushels, is due to a lack of available nitrogen in the soil, and possibly to a deficiency of available phosphoric acid. There is enough of it in the soil, but the wheat is not able to take it up—while the corn is.

"A bushel of corn and stalk," said the Doctor, "contains about ¾-lb. of phosphoric acid, and a bushel of wheat and straw about the same amount. And we shall not be far wrong in assuming that a bushel of wheat and straw contains 1¼ lb. of nitrogen, and a bushel of corn and stover about the same. Why a given piece of land that will only grow, without manure, 15 bushels of wheat, will grow 30 bushels of corn, is a question that, at present, can not be answered. You need more experiments, and Prof. Atwater is entitled to great credit for what he is doing in this direction."

"All of which," said the Deacon, ironically, "is wonderfully interesting. Assume, for the time being, that the reason is because the corn, growing in warmer weather, and perspiring freely, can drink a much larger quantity of water. If it sucks up twice the water from the soil, it would get twice the amount of phosphoric acid, nitrogen, and potash. This is easy enough to understand, and you may as well take it for granted and go on with your story."

"Very well," said I, "then it follows that (1) if corn and wheat *brought the same price*, corn would be a much more profitable crop for the 'chemical farmer,' than wheat. The wheat might leave more than half the 'chemicals' in the ground, while corn might take up two-thirds or more of them. (2). It follows, too, that land may be much more rapidly and completely impoverished by growing corn, than by growing wheat, but (3), on the other hand, if the crop is fed out on the farm, corn can be used to great advantage in developing and increasing the fertility of the farm. It will gather up the nitrogen, phosphoric acid, potash, etc., from very weak solutions in the land, and when the crop is fed to animals, from 80 to 95 per cent of the valuable ingredients of plant-food will be left in the manure, and the manure can be used for growing crops which need a larger supply of plant-food in the soil, and which command a higher price."

"That is not a bad idea," said the Doctor. "You can grow corn, and, by feeding it out on the farm, make your land rich enough to grow good crops of wheat, potatoes, barley, etc. All these crops, in proportion to the nitrogen, phosphoric acid, and potash that they contain, usually bring a higher price than corn."—"In some parts of the West," said the Deacon, "one bushel of wheat will buy four bushels of corn, and even here one bushel of wheat will buy 2½ bushels of corn."

"And yet," said I, "a bushel of wheat takes no more plant-food out of the soil than a bushel of corn. Corn and clover can be grown cheaply on good land, simply because they can live and thrive on soil that does not contain sufficient available plant-food for profitable crops of wheat, barley, etc."

"The experiments published in the *American Agriculturist* for February," said the Doctor, "possess unusual interest. On Mr. Birdsey's farm, three of the plots dressed with nitrogen and phosphoric acid, produced 20 bushels of shelled corn per acre. On two other plots, where potash was used alone, and with nitrogen and phosphoric acid, the yield in both cases was 48 bushels per acre. It seems clear that the soil was deficient in potash. It contained enough available nitrogen and phosphoric acid to produce 48 bushels of shelled corn per acre, and it produced only 20 bushels simply from lack of potash. When this was supplied, the yield rose up to 48 bushels per acre."

"But this is not by any means a maximum crop," said the Deacon, "and it is curious that some of the plots dressed with nitrogen, phosphoric acid, *and* potash, did not give a larger yield."

"The reason," said I, "seems to be this. The soil was really deficient in available potash. It takes nearly 2 lbs. of potash to produce one bushel of corn and stalks, cobs, etc. On Plot No. **5**, 53½ lbs. of potash, 17 lbs. phosphoric acid, and 10¾ lbs. of nitrogen, were sown per acre. This dressing increased the crop 28 bushels per acre. It would probably have been more if more potash had been applied. The nitrogen and phosphoric acid could do no good, because there was not enough potash to produce a larger crop. On Plot **3**, 160 lbs. of potash alone was applied per acre, and the yield was no larger than where 53½ lbs. were sown. There was nitrogen and phosphoric acid enough for only 48 bushels per acre, and the excess of potash could not raise it above this point."

"This experiment," said the Doctor, "shows that while there are occasionally soils which, owing to peculiar treatment, such as the use of bone-dust, fish manure, dried blood, etc., are relatively poor in potash, and rich in nitrogen and phosphoric acid, yet, even in this case, a large and profitable crop of corn can not be grown by the use of potash alone. We need nitrogen and phosphoric acid, in addition to the potash, to produce a maximum crop. The climate or season was probably capable of producing 70, 75, or 80 bushels of corn per acre, and the reason why Plot No. 3 produced only 48 bushels was, probably, due to a lack of nitrogen and phosphoric acid.

"In Mr. Bartholmew's experiments," continued the Doctor, "phosphoric acid seems to have been the weak link in the chain. The 'No Manure' Plot produced about 16 bushels of corn per acre; plaster alone increased the yield to over 19 bushels per acre. Plaster *and* 17 lbs. phosphoric acid, increased the crop to over 33 bushels per acre; plaster and 25½ lbs. of phosphoric acid increased the yield to nearly 38 bushels per acre; while plaster and 51 lbs. of phosphoric acid increased the yield to over 41 bushels per acre. The reason none of the plots did not yield over 41 bushels per acre, is probably due to a deficiency of nitrogen in the soil. In this case, therefore, as in the other, the evidence all tends to show that if we want a good, profitable crop of corn, we must in some way furnish a liberal supply of nitrogen and phosphoric acid. Hen manure and plaster gave a yield of 56½ bushels shelled corn per acre."—"Good," said the Deacon, "I always told you that hen-dung and plaster would beat your artificial manures."

"It is a capital manure," said I, "but you can raise just as large crops of corn with artificials as with hen manure. What we want is a good supply of nitrogen and phosphoric acid."

And now, how are we going to get nitrogen and phosphoric acid? It seems clear to my mind that we can not afford to pay 20 cents a lb. for nitrogen to raise corn at 25 to 50 cents a bushel. Where we can get 75 cents a bushel, and can make good use of the "stover," it may pay well to use artificial manures for corn, but even in this case I am inclined to think it will be better to use the artificial manures on some other crop, and plant corn afterwards to gather up the nitrogen, phosphoric acid, and potash that they leave in the soil.

We can not be too often reminded that it costs just as much to plow, harrow, roll, mark-out, plant, cultivate, hoe, and cut up an acre of corn that produces only 16 bushels, as one that produces 70 bushels. What we want to ascertain is, how to produce good crops. It is all very well to tell us that a few pounds of phosphoric acid will increase the yield of corn from 16 to 41 bushels per acre, and that at 70 cents a bushel the application of this manure affords a profit of $12 per acre. This is true. But we might better say "if we use the superphosphate, the *loss* of growing corn on such land will not be as much by $12 per acre as if we planted the field without manure."

We must first ascertain how many bushels per acre it requires to pay expenses, interest on land, etc., and then, if we know how much it costs to increase the yield over and above that amount, we can tell whether we are making or losing.

As far as possible, we should aim to raise corn on land naturally rich enough to produce a fair crop without manure. If we have a piece of low, rough land, that needs nothing but draining and cultivation to make it rich, there is the place for corn. Drain this land and get a big crop of corn from it, and use the corn and stover to feed out and make manure for the poorer, upland portions of the farm.

On good, clean, highly cultivated land, where we can use the reaper and mower, it is not clear to my mind that corn can be grown to advantage except as a "fallow crop." If we want to clean the land, or if it contains a quantity of plant-food that wheat or barley, or potatoes, or hay, can not utilize, we may plant corn with great profit. But we should rarely plant corn on land that is capable of producing good wheat, barley, potatoes, roots, and hay, and where these crops can be sown and harvested to advantage, unless it is for the purpose of cleaning the land, or for utilizing the plant-food which the higher priced crops leave in the soil. I feel certain, at any rate, that it will be rarely good management to raise corn on such land, and sell it at ordinary prices. We can afford to raise clover on our farms, but it is seldom, indeed, that we can afford to sell it. We had better sell timothy hay. It takes less from the soil, and brings a higher price. So it is with wheat, and barley, and potatoes. Corn and clover are grand crops, but unless you have new, rich, cheap land, you can not afford, at ordinary prices, to raise them to sell.

GAIN OF WEIGHT IN GOOD STOCK.—It is one of the advantages of keeping good stock, that not only is more flesh gained for the quantity of food consumed, and a better quality of flesh produced, but the waste in the shape of offal is greatly reduced. The Shorthorn heifer "Miriam," bred by Mr. J. Stratton, which was awarded first-prize for the best female at the Butcher's show at Islington, England, last year, weighed alive 1,868 lbs. The

dressed weight was 1,346 lbs., giving over 72 lbs. dressed to the 100 lbs. live weight. Perhaps there is no other animal than a very good Shorthorn, that would dress so well, and an instance so well authenticated as this, shows the value not only of the breed, but of good feeding as well.

A Cheap Poultry House.

Mr. "W. A. B.," Caroline Co., Md., sends the following description of his poultry house, suitable for those who need a cheap building, and can do the greater part of the work themselves. The plan is given in figure 1. The center building is 10 x 10 feet, and is 6 ft. to the eaves. The wings are each

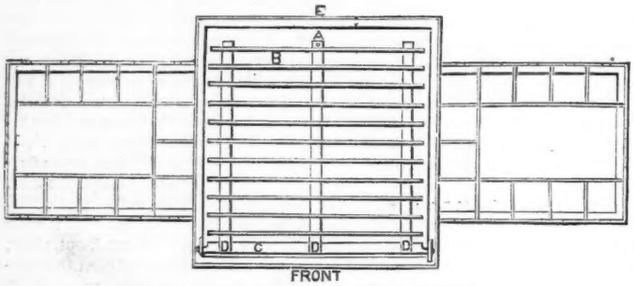


Fig. 1.—GROUND PLAN OF POULTRY HOUSE.

8 x 6 x 4 feet. Either of the three parts may be built first, and the others may be added from time to time. No posts are used in building it. The sills, 3 x 4 in., and 10 ft. long, are mortised and put together in place; the plates, 3 x 3 in., and 10 feet long, are put on the sills; then eight boards are cut six feet long, four of them with the angle at the top to correspond with the pitch of the roof. These are nailed to the sills, and those in front and back nailed to the edges of those on the ends. Then four sticks are cut each five feet six inches long,

Fig. 2.—FRONT ELEVATION OF POULTRY HOUSE.

the plate is raised up, a stick put under it on the sill, in each corner; the boards are then nailed to it, and the frame is raised, boarded, and battened, and it is strong enough. The roosts are arranged as in figure 1; the piece, *C*, rests on the plates, and is held in place by cleats, and acts as a hinge. The pieces, *D*, are secured to it, and the roosts, *B*, to them. At *A* is a ring bolt, and over head a hook. When the house is to be cleaned out, the roostsare raised and hooked up, and are six feet high, so there is no trouble working under them. The door, *E*, is 6x3 ft. In each wing there are two rows of nests, each nest 18 x 18 x 12 inches, 12 in a row, 24 in each wing, and 48 in all; the bottom of the lower row is two feet from the ground, and under it are five

Fig 3.—END ELEVATION.

coops on each side, in each wing, twenty in all, (18 x 18 x 20 inches). These are closed inside with slats, and each one is independent, and entered from the outside, as shown in figures 2 and 4. The entrances to the nests are in the doors, as in figure 2. Figure 4 is an inside view of one of the wings, showing the interior arrangement of one side. The

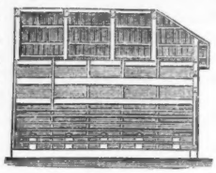


Fig. 4.—SECTION.

two windows in front, one in each wing, three doors, and twenty-three entrances for the fowls, will give sufficient ventilation, but if more is needed, small doors or windows, 18x18 in., can be put above the plates, in the ends of the center building. The cupola is not necessary, but it allows the foul air to escape; it costs about a day's work for a handy man, and is built of scraps. The cost is for 875 ft. of lumber, $14; shingles, laths, and strips, $16 75; nails, hinges, glass, screws, and putty, $3.75. Total, $34.50, for materials. The roof need not, of necessity, be shingled, but it will be found the cheapest in the end, and at the same time it looks better.

Goat Keeping for Profit.

The number of goats kept in the United States is rapidly increasing. Large flocks exist in parts of California and Texas, and many persons are turning their attention to the keeping of these animals as a profitable occupation. In some localities, goats are kept for their milk, and for this purpose they may be doubtless made still more widely useful. But goats can not be kept in large flocks for milking, nor is the flesh at present marketable. The profit from the goat can come only from the skin and the hair. A large quantity of goat skins is yearly imported for tanning, to produce morocco leather, and the hair of the common goat is valued for the plasterer's use. The Angora goat bears a fleece of "mohair" that is valuable for several different manufactures, and the Cashmere goat has an undergrowth of fine wool, from which the most costly shawls are made. By crossing with the Angora males, the common goat can soon be bred up to a point where the fleece is worth as much as that of the pure bred, and it is evident that if the largest profit is desired, the best animals should be kept. The goat will thrive where the poorest sheep would starve, and it better enjoys the rough fare of rough places than the sweetest pastures of grass.

There are many rocky and half-barren localities that might be put to good use by being turned into goat pastures, and there are many better pastures, ill-fitted for the less hardy sheep, upon which goats could be successfully kept. While much hardier than sheep, and less subject to destruction by dogs and wolves, goats have yet some diseases of their own to contend with. Of these, foot-rot is the worst, and diarrhœa and dysentery are sometimes troublesome. Of parasites, the louse is the only one that is seriously injurious, and this is not at all difficult to deal with. Foot-rot, and the other ailments of this animal, are to be prevented, or treated, precisely as those of the sheep; and precautions to avoid damp and close confinement during the kidding season, are necessary. In general, the management of a flock of goats differs in no material respect from that of a flock of sheep, the rules for feeding, breeding, etc., of the one, apply equally to the other.

Scoops for Sowing.

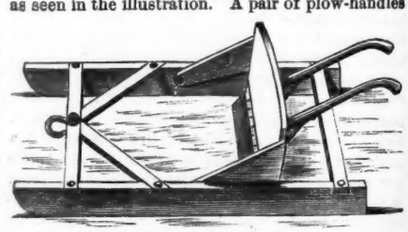
In sowing fertilizers or plaster, it is disagreeable to use the hands. A convenient implement for this purpose may be made of a piece of tin plate (a fruit can, which has served its first use, will furnish the material), cut in the shape shown at figure 1. This is then bent around a circular piece of board, and nailed with a few tacks or shingle nails. A handle is then inserted as shown at figure 2, and the scoop is complete. Various sizes may be made, one that will hold a quarter of a pound, will sow as near as need be, 100 lbs. per acre, each cast covering a space 16 feet long by 8 broad; 350 of these casts will cover an acre, and will use nearly 90 pounds of material. If double this quantity is to be sown, and great evenness is desired, it would be best to use the quarter-pound scoop and sow both ways. The same sized scoop would sow 6 pecks of wheat per acre. In using these scoops, it is necessary to give them a sudden slight twist, just as the contents are thrown out; this spreads the material in a broad sheet which covers the space mentioned, or may be made to do so by a little practice. Great skill in using these may be gained by practising with a pailful of sand, dry ashes, or lime, upon plowed ground. The sown material is then easily seen.

Fig. 1.—TIN.

Fig. 2.—SCOOP.

A Road Leveler.

We recently saw a machine in use to level some ground that had been graded down, which operated very effectively, and would serve a good purpose in smoothing roads. As this work will soon be necessary, we give an engraving and description of this implement. It consists of a frame of 3x6 inch hard-wood timber, made as shown in the engraving, with the ends rounded, so that it will slide over the ground easily. Near the center, the scraper is pivoted on two one-inch iron bolts. The scraper is made of a plank, a foot or more in width, with a slightly curved steel edge, bolted in the front. It is connected with the frame by two side-pieces of hard-wood plank, strongly bolted to it, as seen in the illustration. A pair of plow-handles



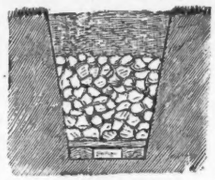
SCRAPER FOR LEVELING ROADS.

is fixed to the back of the scraper. The machine is drawn by an ordinary clevis, fixed to the front bar, and a short chain. It should be about 10 feet long, and 6 feet wide, to be used with a pair of stout horses or a yoke of oxen.

A Cheap Drain.

Where neither tiles nor stones can be easily procured, a good, useful drain may be made of hemlock lumber. In soil always wet, such as swampy meadows, or where springs abound, hemlock will last many years. The drain, of which the engrav-

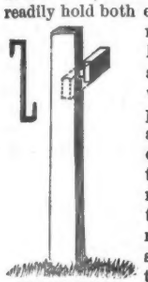
ing shows a section, is made of pieces of 2×4 scantling, and boards 7 inches wide. This gives a water space of 4×5 if the scantlings are set upon edge, and 2×4 if they are laid flat and the boards overlap an inch and a half. The waterway may be made larger by hollowing a channel in the bottom. When stones can be procured, this drain is still to be recommended, because the stones can be placed above the boards, as shown in the illustration, and a permanent bottom is thus provided for the stones. When a large volume of water is escaping, both the upper and lower drains will be in action, and otherwise only the lower one. Should one of the drains be stopped, an outlet will be found through the other.



SECTION OF DRAIN.

Aids in Fence Building.

One man, alone, finds it a difficult job to build a board fence, inasmuch as one pair of hands can not readily hold both ends of a twelve-foot board, and nail one end at the same time. By using the hooks shown in the accompanying engraving, this work may be easily done by one person. In the figure is shown a hook and guard for holding the end of the board that comes next to the finished panel. It is so made that, when hung upon the top of the fence post, the board rests upon the hook, and can not slip off. Then the other end of the board is nailed, the middle is nailed, and then the end held upon the hook. The hook is then moved for the next place. To hang the rest of the boards, hooks, such as shown at the left, may be used, of various lengths to suit the different spaces between the boards. The uses of these are too obvious to need description.



FENCE HOOKS.

Covered Cattle Yards.

As the feeding of cattle must necessarily become an important part of our system of agriculture, the study of the best methods of sheltering and feeding animals becomes of interest. This subject has long occupied the attention of English farmers who have been obliged, for the sake of economy of manure, and for the comfort and thrift of the stock, to furnish most complete covered yards in which to feed the animals. A substantial and complete yard for this use has been recently erected, enclosing a space of 112 feet long by 80 feet wide—large enough to accommodate 75 head. The roof rests upon outside walls, and two rows of iron pillars, 10 feet long, support it on the inside. The pillars are 5 inches in diameter, and rest upon foundations of stone work. The center roof rests upon plates, which are supported by the pillars; the outside roofs rest upon flanges upon the posts; the latter are lower than the former, the difference leaving a space for ventilation, and also an escape for the rain water, which is caught in 6-inch gutters and carried off. The roof timbers are all 9 inches by 3, and are tied by iron rods, as shown in figure 1. The portions of the central roof are laid flush, and held in place by blocks and braces; this is to raise the roof so much more, and to provide a large space for ventilation. The rafters are 18 feet long and 3 x 2½ inches thick. Portions of the roof are glazed to admit a plenty of light. The total cost of the whole building was less than $1,500. The space enclosed is nearly one thousand square yards, or nearly a quarter of an acre; the cost of the whole building is less than a dollar and a half for each square yard enclosed. The interest on the total cost at 10 per cent, which would repay the whole with interest at 7 per cent in less than 20 years, is $150, or an annual charge of only two dollars per head of the stock accommodated. This cost is more than repaid by the increased value of the manure made, which has been found to be equal to 50 per cent; and by the saving of feed consequent upon the greater comfort of the animals, and this has been found to be equal to one-eighth of the usual amount consumed. So that in practice, instead of resulting in a charge upon the cattle, the use of these yards gives a direct and handsome profit upon the investment. At figure 1 a cross section of the structure is given, and at figure 2 a portion of the longitudinal section. The amount of manure made by each animal fed in a covered yard, and littered with 20 pounds of straw daily, during the season of 6 months, may be estimated at 432 cubic feet, or nearly 3½ cords. Having had some experience in making manure in covered sheds, and knowing the extra value of such manure, we consider that if this were the only advantage gained, it would be sufficient to repay the cost of the yard.

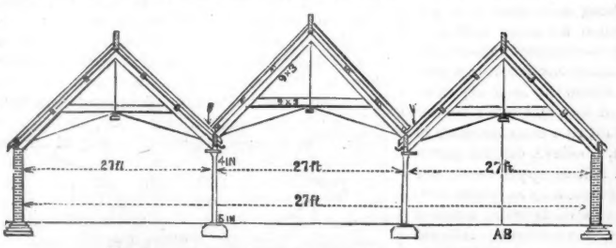


Fig. 1.—CROSS-SECTION OF COVERED CATTLE YARD.

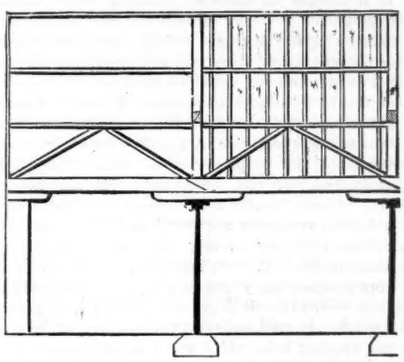


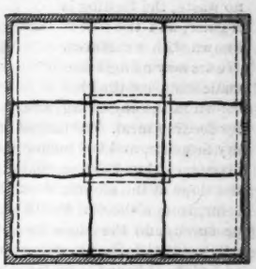
Fig. 2.—LENGTHWISE SECTION OF CATTLE YARD.

AGRICULTURE IN KANSAS.—The report of the Secretary of the Kansas State Board of Agriculture, Alfred Gray, Esq., gives a very flattering account of the prospect for the coming year in that State. The condition of the winter grain is fully one quarter (25 per cent) above the average; and that of live stock is almost as favorable. Over a million acres of wheat was grown last year, yielding over 13,000,000 bushels. More rye was grown than in any other State in the Union; of corn over two and a quarter million acres were planted, yielding over 40 bushels per acre, a total of over 103 millions of bushels; of oats 310,000 acres were sown, producing nearly 13 millions of bushels, or an average of over 40 bushels per acre.

AN UNTOWARD DECISION OF THE SUPREME COURT WITH REGARD TO TEXAN CATTLE.—Several of the Western States have a law prohibiting the passage of Texan cattle within their boundaries during the portion of the year when there are no frosts. This law is an absolute necessity to prevent the spread of the so-called Texan or Spanish fever, and the almost total destruction of native stock. A decision has been recently rendered by the U. S. Supreme Court, which affirms that this protective law is void as being at variance with the Constitution of the United States. The States have the right to exclude any diseased stock, but it must be shown that the stock are really diseased. There is then no longer any protection for cattle, and unless Congress shall pass a general law, regulating the traffic in Texan cattle, disastrous losses will undoubtedly occur. Here is a case in which the Agricultural Department might take the initiative, and do a service which would be vastly more useful than fussing over the culture of tea and coffee.

How He Made a Liquid Manure Cistern.

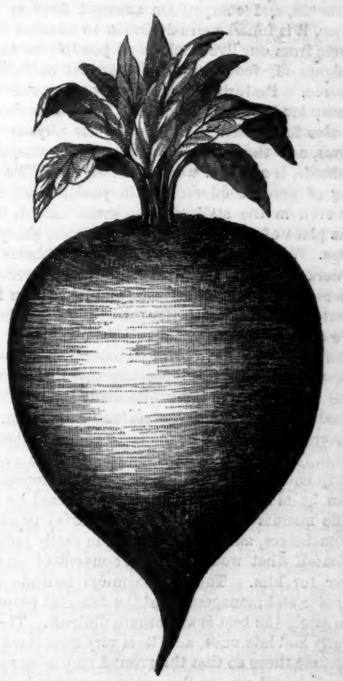
"W. E.," Jerseyville, Ill., sends a plan for constructing a liquid manure cistern in the barn yard, for receiving the drainage from the stables and the yards. It is not intended for the rain water from the roofs, although if this were permitted to flow into it, and the manure pumped out and spread upon grass land occasionally, it would be advisable. The cistern is 9 feet square, and lined with brick. A brick wall, enclosing a space 3 ft. square, is built in the center, and several openings are made in this wall, which is for the purpose of supporting the covering. The cover is of flag stones, 3 feet square, and there are 9 of these laid, as shown in the illustration. The cistern may be made as deep as may be desirable. It has 8 square feet of surface, and for each foot in depth will contain 20 barrels. If 7½ feet deep, it will hold 150 barrels, which will give a very good manuring to one acre of ground at the rate of nearly one barrel of the liquid fertilizer to the square rod. A square hole may be cut in the center stone to receive a pump.



PLAN OF MANURE CISTERN.

A New Mangel—"Webb's New Kinver."

In England, where root crops are of the greatest importance, special shows are held of Mangels and Rutabagas. It is said that the Mangel known as

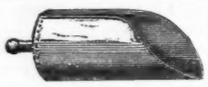


"WEBB'S NEW KINVER" MANGEL.

"Webb's New Kinver," has taken more prizes at the recent shows than any other. Mr. Wm. Crozier, of Northport, L. I., has cultivated it, and says, "it is the best Mangel I have ever seen." It is claimed for it, that it grows very smooth and uniform, has but a single tap-root, is very solid, and of a pale orange color. It is claimed that, in England, as much as 80 tons to the acre have been raised of this variety. The engraving shows that it is quite unlike the usual Mangels in shape. It is offered by Messrs. R. H. Allen & Co., of New York, as "the best Mangel in cultivation."

A Scoop for Measuring Feed.

Guess work is rarely economical. It is surprising how far from the truth many of our guesses will be found, if put to the test of accurate measurement or weight. In feeding it is best to be accurate. There is then no waste, the feeding is regular, and the cost is known with exactness. We are now using home-made scoops of the kind shown in the engraving, and find them convenient for feeding meal. The largest one holds two quarts, dry measure, and is 9 inches long, and 4½ inches in diameter; thus holding, making due allowance for the slope at the mouth, about 135 cubic inches. It is cut from a sheet of tin 9×13, which can be easily procured, and the edges do not meet exactly, thus making it 4½ inches in diameter. The end is made of a piece of board sawn into a circle, or turned in a lathe, and an ordinary door-stop is used for a handle. A one-quart measure would be half the length of this, and if four quarts are needed, it is easy to take two of the 2-quart scoopsful. We find that one size is sufficient for all purposes, and to save the trouble of hunting them when they are wanted, one is kept in each feed-box and grain-bin.



SCOOP.

Fodder Crops—Which to Select.

Fodder crops, to be fed in a fresh condition to stock, are now recognized by thorough farmers as a necessity. Every year this system is practised more widely than before. As land becomes more valuable, and competition amongst farmers more close, it is found more desirable to increase the income from our live stock by all possible means. To enlarge our food supply is the most available resource. Pasturing is now only profitable upon cheap land, or such as can not be made arable. It is also found that to economize the physical exertions, and the consequent muscular waste of the animals, is a matter worth considering. The feeding of green fodder crops in yards, small fields, or even in the stalls, is, to a great extent, taking the place of pasturage of cows, horses, sheep, and pigs. We are obliged to make many blades grow where one grew before, to support the necessarily increased number of animals, and it has been found that by procuring a thrifty growth of green-fodder, we can feed as many animals from one acre, as we could feed from five acres or more of pasture. For cows and horses, it is necessary that these crops be cut and carried to them, else many times as much food would go under foot as would be eaten. But sheep and pigs may be made to consume the crops from the ground, by penning them within a narrow strip enclosed by hurdles or portable fences, that can be moved as the ground is cleared by them. The manner of feeding may be varied to suit circumstances, and every farmer can easily judge for himself what would be most convenient and proper for him. There is so much latitude in the choice and management of the different crops, that to select the best is sometimes difficult. There are early and late ones, and it is very important to alternate these so that the ground may be always occupied, and two or three may be grown in succession in one season. At present, fodder corn is grown more than anything else for this purpose, but there are several other crops, of quicker growth early in the season, and that give an equally heavy product. Oats and peas mixed, 2½ bushels of the former, and 1½ of the latter, may be sown a month or six weeks before it is safe to plant corn, and will yield 8 or 10 tons per acre, of the best and richest milk-producing feed. Barley and vetches, mixed, and sown in the same proportion, are also a valuable green crop, and are especially well adapted to horses. Either of these crops may be followed by sweet corn of an early variety, and this may be cut and removed in time for a crop of millet or turnips. These three crops may easily be taken from the same ground in six months, and in the aggregate will yield 30 to 50 tons per acre without very copious manuring. Probably there are no others that are so prolific as these. It is widely supposed that there is no advantage in feeding sweet corn over the common field variety. The error of this is evident when we consider how much more sugar there is in the sweet corn than in the other, and sugar is nutriment. In many places near towns and cities, where green sweet corn ears can be sold, this crop may yield two profits, one from the ears, and the other from the stalks; some wide-awake farmers have discovered this, and take advantage of it. It is besides an excellent cleaning crop. Some experiments are being made in the Northern States in growing the southern "field," or "cow" pea as a fodder crop. How this will result we can not say at present; we have procured seed for a trial of this crop the present season. A bushel of seed per acre, should be sown in drills, and three month's time is required to mature the crop for cutting. In the South, this crop is of great value for feeding green, and with this, winter oats, corn, and millet, may be made to give a succession. Cabbages and kohl-rabi are much neglected as fodder-crops, although they may be very conveniently grown, by planting them in rows between a corn crop. The corn protects the young plants, and when it is cut they occupy the whole ground. The cabbage plants are raised in seed beds and transplanted at the proper season; kohl-rabi is sown in drills as turnips, and thinned out to one foot apart in the drill; the thinnings may be set out at the same distance. This latter crop does not impart a disagreeable flavor to the milk when fed to cows. Prickly Comfrey, at the North at least, is still a matter of experiment; the coming season should allow its value to be ascertained.

Root Crops for Stock.

BY PETER HENDERSON.

While "Mangels" and other roots for stock feeding have been largely cultivated in Europe, for the past 30 years, it is surprising how little it is yet done here, particularly when we know how well our soil and climate are, in most sections, adapted to the purpose, and how great are our necessities, particularly in those States, where the long dry summers diminish the crop of hay and other fodder plants. The most important root crop for stock is the mangel-wurzel, which, I believe, can be grown and matured in any good soil in any State in the Union. As with all root crops, a loose friable soil, with a sandy or gravelly subsoil, is better adapted to it than a stiff soil with a clayey subsoil. All root crops require deep culture; the soil should always be plowed to the depth of 10 inches, and, if it can be done, it will pay well to let the subsoil plow follow in the wake of the other, and stir the subsoil 10 inches more, making a loosened depth of 20 inches.

In many of our deep, rich, new soils, an excellent crop of mangels, or other roots, can be grown without manure; but when necessary to use it, nothing is better than well-rotted stable manure, composted with as much muck or turf from roadsides, spread evenly over the surface before plowing, at the rate of from 6 to 12 tons per acre; in absence of stable manure, bone dust, superphosphate, or guano should be applied, at the rate of from 300 to 500 lbs. per acre; but all such concentrated fertilizers should be sown on the surface, after plowing, and harrowed in, until thoroughly mixed with the soil. Before sowing, the ground should be smoothed as evenly as possible with the back of the harrow, to present a smooth and level surface for the reception of the seed. The distance apart between the rows for mangels, will vary with the character of the soil. In light, sandy soils, the rows should be 24 inches apart, with 9 inches between the plants, but in strong, rich, deep soils, the rows should be 30 inches apart and 12 inches between plants. This is what is termed the "flat culture." Mr. Wm. Crozier, of Northport, L. I., works on an entirely different plan from this, and his success in producing enormous crops shows it to be well worthy of imitation. After thoroughly plowing, harrowing, and smoothing the land, he strikes out furrows with the double mould-board plow (if this is not obtainable, any plow that will make such a furrow will do), 30 inches apart, the furrow is 6 or 7 inches deep; these furrows are then half filled up with a compost made from stable manure and turf parings from the road sides, about equal parts, thoroughly mixed and decomposed, or if yet rough and unrotted, it is pressed down in the rows with the feet; after the manure has thus been placed in the furrows, the plow is run up between on each side, so as not only to cover in the manure, but to raise a ridge as high as the furrow was deep; these ridges are now run over with a roller or a light chain harrow, so as to take off or flatten down 2 or 3 inches of their apex, and so broaden the ridge as to allow the seed sower to work on it to deposit the seed. Where stable manure is not obtainable, Mr. Crozier recommends blood and bone fertilizer, or bone dust, sown in the furrows at the rate of about 300 lbs. to the acre, but where such fertilizers are used the ridge over the furrows should not be raised so high as over the manure. About 8 lbs. of seed is used to the acre, if put in with the "Planet," or other seed drill; when sown by hand, fully double that quantity would be required per acre. Mr. Megatt, the extensive seed raiser, of Hartford, Conn., recommends that, in using the seed sower, the hopper should never be more than two-thirds filled, and should never have any lid or cover, so that the operator can see its action, and should be shaken clear of all dust, as it accummulates, so that the seed may be evenly distributed. When the plants are up, they are to be thinned to 12 or 14 inches apart, and the land is well cultivated, so that before the crop covers the ground the ridges have been so levelled down that the rows of roots are nearly as low as the spaces between.

This ridge system of culture, both for mangels and turnips, although it requires more labor, is a saving in manure, and there is no doubt that these crops are greatly benefited by having the soil gradually taken from the ridge by the cultivator, and exposing their roots, or "bulbs," to the air. The best time for sowing, in the latitude of New York, is from May the 1st to the 15th. The time must, of course, be varied according to locality; probably the best guide in all sections, is to sow from 8 to 10 days *before* the time that corn is usually planted. The varieties most used are: "Webb's Mammoth," and "Norbiton Giant, (red varieties), and the "North" and "Kinver Globe," both yellow kinds. The average weight of the crop of an acre in mangels is 40 tons; though, in some soils, they have yielded double that weight. Of course their cash value, as compared with hay, (rating hay at $15 per ton), will vary largely under different circumstances, but Mr. William Crozier considers that the average value of mangels for stock feeding purposes, to be $4 per ton, or $160 per acre. While hay would be, under the same condition, (estimating 2 tons per acre), only worth $30 per acre, the expense of seed, manure, and cultivation of the mangels, at the utmost, need not exceed $80 per acre, so it is clearly seen that the crop for feeding purposes is a profitable one. What has been said on the modes of culture for mangels, may be applied

To Turnip Culture,

except as to the time of sowing. The Swedish or Ruta Baga varieties of turnip, should be sown, in this latitude, from May 25th to June 25th, and the Yellow Aberdeen and Strap-leaved kinds, from July 1st to the middle of August. When sown at these dates, the distance apart may be the same as for mangels, but both of the classes may be sown a

month later—that is, the Ruta Bagas may be sown from June 25th to July 25th, and the Strap-leaved kinds from the middle of August to the middle of September, but, when sown thus late, they should be both between rows and between plants, one-third closer. The varieties that we find best, are "American Ruta Baga" and "Purple-top Ruta Baga;" of the Strap-leaved kinds, "Red-top Strap-leaved" and "Yellow Aberdeen." Mr. Crozier's estimation of value of Ruta Bagas, as compared with hay, (at $15 per ton), is $5 per ton; average crop, 25 tons per acre, or $125. Purple-top Strap-leaved, or Yellow Aberdeen turnips, he estimates at $3.50 per ton; average crop, 35 tons per acre, or $122.50. Estimating the expense of culture at half the gross value, we have still a large margin in favor of the crop; besides the Strap-leaved turnips can be sown after barley, oats, or rye.

Carrots may properly come under the head of "Root Crops for Stock," though mainly grown for horses, but, even for horses, Mr. Crozier says that he considers them far inferior to Ruta Baga turnips. This is in opposition to the received notion, but we know that public opinion in matters of this sort is often wrong, and when we consider the marked success of Mr. Crozier, as a raiser of both horses and cattle, his opinion in this matter is entitled to consideration. The land for carrots should be prepared exactly as for mangels; it must be deeply plowed, harrowed, and thoroughly pulverized, and whatever kind of fertilizing material is used, it should be thoroughly mixed with the soil to a depth at least of 10 inches. The same quantity and kinds of fertilizers should be used as recommended for the flat culture of mangels, though in new lands, or lands on which corn has been grown after sod, enough of the fertilizing material will usually be left in the soil to mature a good crop of carrots without any manure, provided the soil is deep and in good condition. I once grew 20 tons of carrots per acre on land in this condition, without using a particle of manure. Carrots should be sown from the 1st to 30th of May, and when sown by a seed drill, about 4 lbs. of seed to the acre is required. The rows should be 2 feet distant, and the plants thinned out to 5 or 6 inches apart. An average crop is 15 tons, of the "Long Orange" variety, to the acre, and the present price averages $15 per ton in New York market. The "White," or "Yellow Belgian" Carrots would give one-third more weight, but the quality is inferior and the price correspondingly lower. One of the seeming obstacles to raising root crops on a large scale is the lack of a proper place for keeping them in winter.

Keeping Roots in Winter.

A general impression prevails that they must be kept in cellars or in a root house specially built for the purpose. There is not only no necessity for a special root house, as the simple and cheap method of preserving them in pits in the open ground is far better. I will briefly describe our plan, which I have practised with all kinds of market garden roots for 25 years. Mangels, in this section of the country, are dug up towards the end of October, or just after our first slight frosts; they are then temporarily secured from severer frosts by placing them in convenient oblong heaps, say, 3 feet high by 6 feet wide, and are covered with 3 or 4 inches of soil, which will be sufficient protection for 3 or 4 weeks after lifting, by that time, say the end of November, they may be stowed away in their permanent winter quarters. For turnips and carrots, there is less necessity for the temporary pitting, as they are much hardier roots, and may be left in the ground until the time necessary for permanent pitting, if time will not permit to secure them temporarily. The advantage of this temporary pitting is, that it enables them to be quickly secured at a season when work is usually pressing, and allows the period of their permanent pitting to be extended into a comparatively cold season; this is found to be of the utmost importance in preserving all kinds of roots: the same rules regulating the preservation in winter, apply as in spring sowing; while in this section of the country it must be done not later than the end of November; in some of the Southern States, the time may be extended a month later, while in places where the thermometer does not fall lower than 25 degrees *above* zero, there is no need to dig up any of these roots at all, as that degree of cold would not injure them. The permanent pit is made as follows:—A piece of ground is chosen where no water will stand in winter. If not naturally drained, provision must be made to carry off the water. The pit is then dug 4 feet deep and 6 feet wide, and of any length required. The roots are then evenly packed in sections of about 4 feet wide, *across* the pit, and only to the hight of the ground level. Between the sections, a space of half a foot is left, which is filled up with soil level to the top; this gives a section of roots 4 feet deep and wide, and 4 feet long, each section divided from the next by 6 inches of soil, forming a series of small pits, holding from 6 to 12 barrels of roots, one of which can be taken out without disturbing the next, which is separated from it by 6 inches of soil.

Scotch Method of Wintering Roots.

Mr. Crozier practises with great success the Scotch method of preserving root crops in winter, which he thus describes: A dry spot being selected, where no water will stand in winter, a space is marked out 6 feet in width, and of any length required; this bed is excavated 10 to 12 inches deep, and the soil is thrown out on the bank. The roots, either mangels, turnips, carrots, or potatoes, are built up evenly to a sharp point about 5 or 6 feet in hight, so that the roots form almost an equal sided triangle, 6 feet on the sides. This bed of roots is then thatched over with 4 inches of straw, after which the earth is banked over the whole, about 1 foot in thickness. This covering of earth and straw is sufficient to keep out any degree of frost that we have in this latitude, though we rarely have it much below zero, in colder or warmer sections, judgment must be used to increase or lessen the covering. Vents, or chimneys, made by a 3-inch drain-pipe, or anything of similar size, are placed every 6 or 8 feet along the top of the pit, resting on the roots, so that the moisture generated may escape. In extreme cold weather, these vents, or chimneys, should be closed up, as the cold might be severe enough to get down to the roots. Pits, so constructed, rarely fail to preserve roots perfectly, until late in spring, and are in every respect preferable to root cellars. For no matter how cold the weather may be, they are easily got at; the end once opened, the soil forms a frozen arch over the pit. Mr. Crozier says he has practised this plan for years on his farm at Northport, L. I., some of his pits containing hundreds of tons of mangels, etc.

How to Use Artificial Fertilizers.

In using strong chemical fertilizers, it is necessary to remember that 100 lbs. of such a mixed fertilizer as Ville's "Complete Manure," as compounded by the Mapes Formula Company, contain very nearly as much of the useful chemical elements as one ton of ordinary manure, and further, that these elements are in a directly active and soluble state. If, in applying these fertilizers, we should place them in contact with the seed, the young germ would be fatally injured, and the plant destroyed before it could appear above ground. To prevent this danger, all these concentrated fertilizers should be thoroughly mixed with the soil before the seed is sown, or young plants are transplanted. Our own practice is as follows. For wheat, rye, or other similar crops, the fertilizer is spread in the fall, immediately before the seed is sown; the seed is then sown and both are harrowed in together. In spring we sow the fertilizer upon the surface, and either leave it to be carried in by the rains, or we harrow it in, when we harrow the wheat or rye, with a light, sloping-tooth harrow, such as the Bradley reversible or the Thomas harrow. For corn we scatter a portion of the fertilizer along the rows as soon as they are marked out; it is then well mixed with the soil in the process of planting and covering, and while it is near the seed, it is not in direct contact with it, except in very small quantities, which are thoroughly incorporated with the soil. Afterwards, when the corn is hoed, a second portion of the fertilizer, say 100 lbs. per acre, is scattered along the drills or hills, on each side of the plant a foot or so distant, and then the crop is cultivated or hoed. For field crops of vegetables that are transplanted, such as cabbages or tomatoes, we apply the fertilizer on the harrowed ground as soon as it is marked out, and when setting out the plant, the soil and a part of the fertilizer are mixed together. Afterwards the remainder is given at the first cultivating or hoeing, as for corn. By such methods as these, the young and tender roots are not brought into close contact with the concentrated chemicals of which the fertilizers consist; but they are fed gradually as they reach these in their growth, or as these dissolve and are carried down to the roots by the rains. Lastly, it is well to give the caution, not to leave the fertilizers about where poultry, sheep, or other animals, can pick up fragments or lick the bags; nor to wash the bags in water-troughs, streams, or ponds, where animals drink, as some of the chemicals are poisonous.

POPULARITY OF THE AYRSHIRES.—As a sign of the returning popularity of the valuable Ayrshire cattle might be cited the fact, that at the fair of the New York State Agricultural Society, the Ayrshires outnumbered the heretofore preponderating Jerseys. The Ayrshire, as a butter-making breed, is hardly a rival of the Jerseys; these two should be companions, and not rivals, for each one has invaluable points. A fact of curious significance also, at this fair, was the absence of several of the old successful show-herds, and the entry of new exhibitors, who carried off the honors. It is further worthy of remark that, with all our success in breeding excellent animals, our prize-takers are too frequently imported. Would it not be well to keep prizes only for native bred animals?

IS MACHINERY PROFITABLE?—The grand display of agricultural machinery at the New York State fair at Rochester, in September last, not only attracted much favorable notice from farmers, but also some adverse criticism from other persons with little experience in the use of machinery. The question often arises, "is it profitable to use machines in place of hand labor under all circumstances?" To this might be replied, very decidedly, that it is not. There are some cases where hand labor is more profitable; for instance, a farmer who has nothing to employ his time during the winter, may better use the flail to thresh his grain, than to hire or own a threshing machine to do the work. Although in this case the threshing might cost five times as much in labor and time, yet here time is not money, or at least it may appear that the old adage is at fault for once. But beneath this circumstance even, there lies a mistake. This is, that no farmer should find his time so valueless, that he can afford to spend it in earning 50 cents or less a day, (which is what it costs to thresh 10 bushels of grain with a machine,) and it is a mistake to manage his business so that he has nothing else to occupy his time. This is the principle that should lie at the bottom of this question of the value of machinery. Every man should so arrange his business that "time *is* money" to him, and if he can save time by using a machine of any kind, then he saves money, and its use is profitable.

FEEDING FOR MILK.—"Litchfield." The most economical food for milk cows is a mixture of hay, meal, and bran; and the most economical way of feeding these is to cut the hay, moisten it, and sprinkle the meal and bran over it. This gives some trouble, but it pays. From our own practice, we believe 25 per cent of the feed is saved. One bushel-basket of cut hay, and 2½ quarts of corn meal and bran, mixed in equal portions, is a feed for a cow in good milk. To some cows more of the meal and bran may be given profitably; this must be found by testing the different cows. The above feed is for half a day—that is, is given twice in the day, making 5-quarts of the meal and bran daily. In addition to the above feed, a few pounds of dry hay, or some roots, may be given at noon.

The Use of Corn for Fuel.

Some journals, whose conductors know very little about corn growing, and other things in the West, make their annual outcry in regard to the extensive consumption of corn for fuel, which they consider a great and inexcusable waste. Suppose the Nebraska or Minnesota farmers were to sell two tons of corn for six dollars, and buy half a ton of coal for the money, and the corn were at once taken to a distillery and turned into whiskey. Would this be any better? The farmer would probably have to make two journeys of 10 or 20 miles each, with his loads, and be out of pocket at least $6 by his trade. The fact is, corn is an excellent fuel, and although it may seem at first sight to be wrong to burn up an article of food, yet it is but a mere sentiment which overlooks the fact that to warm one's self by a fire, and to do the same by the consumption of food, are in the end precisely similar in effect. If more warmth can be procured by consuming, in a stove, a dollar's worth of corn, than a dollar's worth of coal, it is a legitimate use for the corn; but when there is neither coal nor wood at hand, what should these people do when the winter's cold pinches, if the corn from their well-filled cribs could not supply them with fuel?

A Plan for a Livery Stable.

At the present time, when economy must be strictly observed by many persons whose income is reduced by reverses, or lessened profits of business, the livery business is increasing its extent. Many who have hitherto kept carriages and horses, have been obliged to give them up, on account of the expense, and to hire them from a livery stable when occasionally needed. This has resulted in a greatly increased demand for hired horses and carriages, which shows itself in the curious way, amongst others, of inquiries made of us about building and furnishing livery stables. The essential needs in a livery stable are: a convenient arrangement for stalling the horses, and for storing away the carriages. There must be means provided for perfect cleanliness, as nothing injures a carriage more quickly than the ammoniacal vapors from a foul stable. A proper arrangement for cheapness and convenience would be as follows: The building should be from 25 to 36 feet wide, according to the ground that can be spared for it, and as long as necessary to accomodate the number of horses to be kept, allowing 5 feet for each single stall. Generally, it will be found best to build so that additional length can be added, as business increases. The inside arrangement is as shown at figure 2. The office is placed at the entrance upon one side. Opposite, is the pump and water-trough, this trough is connected by pipes with each feed-trough, one end of which is made water-tight and separate for water. The connections are made as shown at figure 3; *a* being the water-trough, *b* the watering boxes for two adjoining feed-troughs, both being supplied by one inlet pipe. The pipe goes through the stable and has a cock beneath the water-trough, by which the water-boxes are drained into the sink. The pump should be one that can be used either for a force or a suction pump, so that, by means of hose, the water can be carried to any part of the building. Along the center, is a row of trap-doors, through which the manure and drainage of the floor are dropped into the cellar. Alternating between the doors, are posts furnished with hangers, upon which the harness is suspended. Opposite to the horses is the space for carriages. This is provided with shallow gutters, to drain the water from the washing into the trap-doors and the cellar. In front of the horses, is a row of small windows, one for each stall, provided with lattice shutters, sash, and fly-proof netting, so as to give plenty of ventilation, but only moderate light. These should be above the horses' heads and near the ceiling. The hay and feed bins should be kept above, and spouts provided to drop the feed into each trough below. That no hay or other matter may enter the water-pipe, the inlets are covered with mushroom strainers. At figure 1 is an elevation of the building.

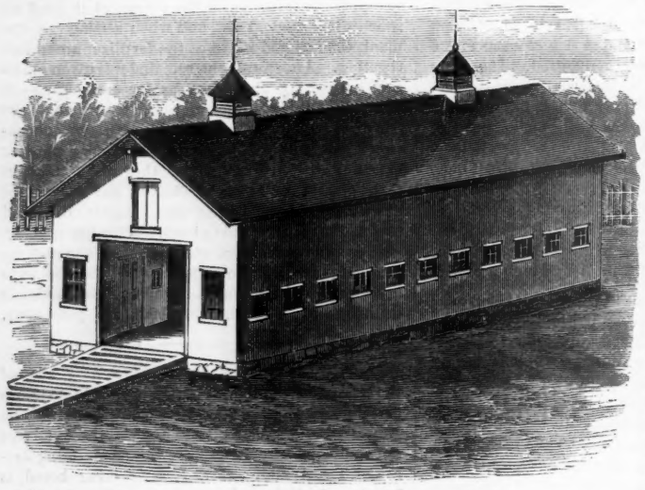


Fig. 1.—PERSPECTIVE VIEW OF LIVERY STABLE.

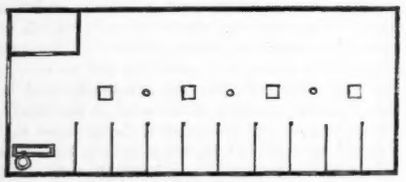


Fig. 2.—PLAN OF STABLE.

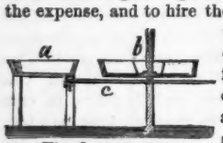


Fig. 3.—TROUGHS.

A Combined Carriage and Tool House.

A number have asked for a plan of a carriage, wagon, and tool house in one building, suitable for a large farm. The accompanying engravings give a plan for such a building, with a granary above. The structure may be 16 or 18 feet high to the eaves, which will give a space of 9 feet in the clear for the lower story, and 6 feet in the clear for the granary at the walls, and 10 or 11 feet in the center between the bins. It should be at least 24 feet wide, and 48 feet long, to give ample space for moving about in it. The wagon and cart house would be at one end, and 24 feet square, shown in the plan (fig. 1), to contain three wagons and a cart. The doors of this portion slide upon rollers, and, to facilitate the movements of the wagons in or out, are in three divisions. The carriage house is in the center, with the entrance at the front. Here is room for two carriages, and a tool house adjoining, with entrance at the end opposite to that of the wagon house. In the carriage house there should be a well and a force pump furnished with a hose, for the purpose of washing off the carriages, and the floor should be made slightly sloping each way to the center, with a gutter there to carry off the water to the rear. One of the Blunt's "Universal Pumps," made by the Nason Manufacturing Co., of New York, would be most useful for this purpose, being the most easily worked, and the most effective of its kind that we know of. It is either a force pump or a draw pump. If it would be more convenient to have the pump outside of the building, one of the "Standard Non-freezing" out-door pumps, of the same makers, would be found useful, either in winter or summer. In case of a fire among the buildings, the pump would be found of the greatest value. The upper floor may be reached by a stairway outside, or from the inside, as may be most convenient. The plan of the bins is given at figure 2. On one side are the three grain bins, and on the other, two lathed bins for corn in the ear. Between these is the hoisting wheel and door; the plan of the hoist is shown at figure 4; *a* being the winding barrel, *b* the pulley wheel, with an endless rope hanging upon it, and *c* the pulley in the cat-head. The hoist is supported by hangers fastened to the roof timbers and the plate. Figure 3 is the elevation, which may be changed to suit the wishes or the means of the builder. Here it is made perfectly plain, in order to meet the wishes of the most economical.

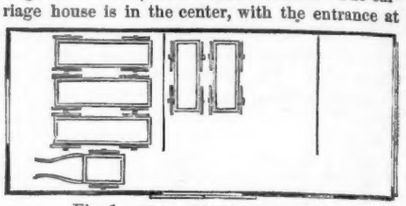


Fig. 1.—PLAN OF WAGON HOUSE.

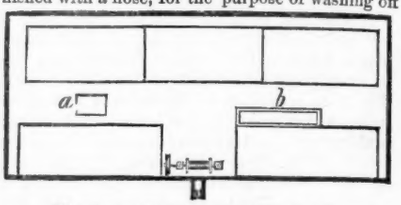


Fig. 2.—PLAN OF THE UPPER FLOOR.

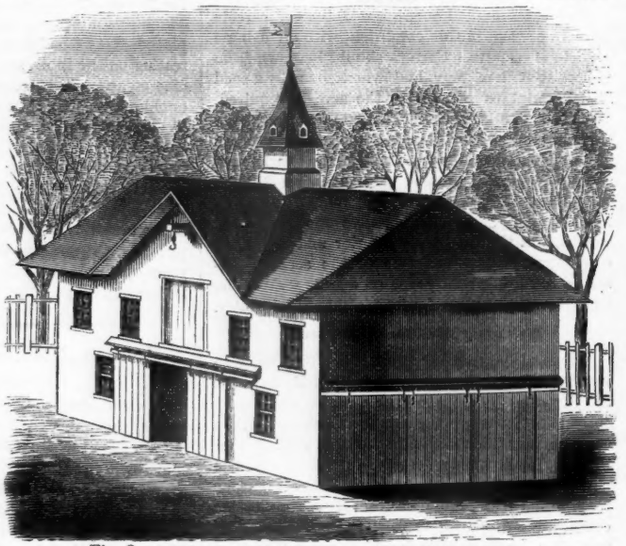


Fig. 3.—VIEW OF COMBINED WAGON AND TOOL HOUSE.

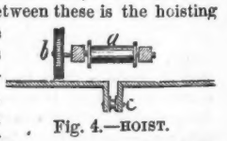


Fig. 4.—HOIST.

The Common Reed.—*Phragmites communis.*

The most stately and conspicuous native grass of the Northern States is the Reed. It is also one of the most widely distributed, as it not only extends completely across this continent, but has an equally wide range in the Old World, from the tropics to the arctic zone, and even occurs in Australia. It is found in swamps and marshes, and along the edges of ponds, sometimes reaching the hight of 12 feet, and having, at a distance, much the appearance of Broom Corn. In less favorable localities, it grows to only 5 or 6 feet, and we have seen it flower when only two feet high. The leaves are numerous, on large plants about two inches wide, and the stem is terminated by a large, soft, purplish panicle of flowers, which usually gracefully bends to one side, and is from a few inches to one or two feet long. The individual spikelets are from ¼ to ½ inch long, and each contains three to six flowers; the lowest one is staminate, or neutral, while the others are perfect; the little stalk which supports the florets is furnished with very long and silky hairs. The engraving gives the general appearance of the flower cluster or panicle, though reduced in size, and below is a separate spikelet, about twice as large as natural. The plant has numerous strong underground stems, or root-stocks, which extend in all directions, and have been known to reach the length of 40 feet; these make the Reed a most servicable plant in securing the banks of rivers, as by their interlacing they bind the soil and prevent washing; it has also been planted to aid in the reclamation of low lands. The foliage is eaten by cattle when it is very young and tender, and then only when other food is scarce. In Northern Europe the stems are used for thatching; they are regarded as the most durable of all materials for the purpose, and they are sometimes used for the construction of huts. Excellent screens, or mats, for garden purposes, are made by placing the stems side by side, and interlacing them at the ends with osiers. The Swedes are said to use the panicles to make a green dye for woolen stuffs. Like many other plants which naturally grow in wet places, the Reed bears removal to the drier soil of the garden, and may be used in contrast with *Arundo Donax*, *Erianthus*, and other large ornamental grasses. In the present popularity of grass bouquets, the Reed has been used in large quantities. When dry, the spiklets open, and expose the silky hairs, which are so abundant that the panicle has a very different appearance from that it presents when growing. For this purpose, the panicles should be gathered when they are in flower, which will be known by the presence of stamens, as in the spikelet at the lower part or the engraving. If left until the seed is ripe, or even partly developed, the spikelets are apt to break apart and shed their down in an annoying manner. Formerly this was placed in the genus *Arundo*, and in some of the European works of the present day it will be found as *Arundo Phragmites*, but the name generally accepted is *Phragmites communis*, as the structure of the flowers is essentially different from those of the Arundos. The name *Phragmites* is from the Greek, meaning "growing in hedges," the application of it to this plant is obscure, as it is not a hedge-plant.

THE COMMON REED.—(*Phragmites communis.*)

THE STUARTIA.—(*Stuartia pentagyna.*)

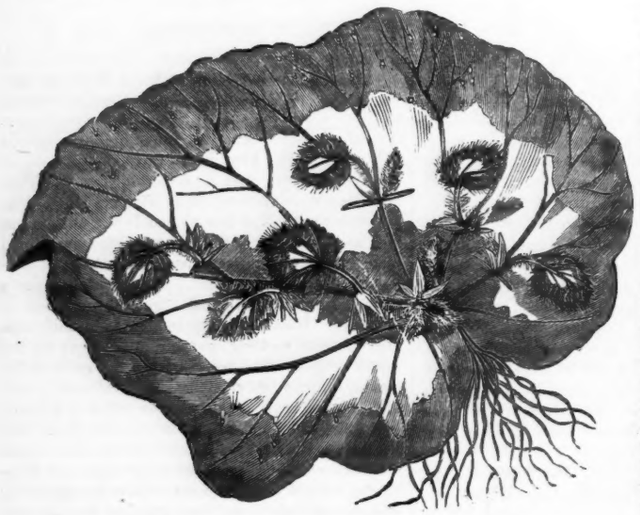
Fine Ornamental Shrubs—The Stuartias.

The indifference of Americans to beautiful native plants, is nowhere more strikingly shown than in their almost entire neglect of the Stuartias. The genus was dedicated by Catesby to John Stuart, Marquis of Bute, who was a correspondent of Linnæus, and is borne by two native species of shrubs or small trees, and by a third, found in Japan. Belonging to the same family with the Camellia, and the Tea, they have a general resemblance to those well known plants, though in the case of the Stuartias the leaves are deciduous. That such showy plants should not have received a common name, is probably due to their comparative rarity in the wild state, but this is the less to be regretted, as *Stuartia* is a pleasing name, and, like *Magnolia*, may well serve in both botanical and popular nomenclature. Our two species are, *Stuartia pentagyna*, (the Five-pistilled Stuartia), found in the mountains of Tennessee and Virginia, to those of North Carolina and Georgia, and *S. Virginica*, (the Virginian Stuartia), which extends from Virginia to Florida, and westward. The first named is the showier as well as the hardier of the two, and is the one offered by a few of our nurserymen. This, *Stuartia pentagyna*, has a bushy habit, and ultimately forms a dense clump 10 to 15 feet high, and as much in diameter. It has oval, pointed leaves, usually with minute teeth on their margins, and downy on the under surface. The flowers, from the axils of the leaves, on very short stalks, are two and a half inches, or more, in diameter; the calyx is covered with silky hairs, and often tinged with red. The petals, usually five, but sometimes six, are cream-colored, sometimes purplish at the base, and beautifully scalloped or crimped on the margins; the stamens are numerous; the pistil has five distinct styles, and ripens into a woody, ovate, pointed 5-celled pod, with one or two seeds in each cell. The other species (*S. Virginica*) differs from this in having downy leaves, smaller, white flowers, and purple stamens; its styles are united into one, and the pod globular. It is less hardy than the other, and probably can not be depended upon north of Philadelphia. The first named species, *Stuartia*

pentagyna, is quite hardy in the vicinity of New York, and, if we mistake not, in the neighborhood of Boston also, but does not prove hardy at Rochester, N. Y. Wherever it can be grown, there is no more desirable shrub, as it is handsome for its foliage alone, and when covered with its large flowers, like a single Camellia, it is one of the most beautiful of all flowering shrubs. The engraving gives the appearance of a single flower—though somewhat reduced in size, and the form of the leaves, but of course fails to give the effect of a large shrub, loaded with flowers of this kind. Another point in favor of the Stuartia, is the time at which it flowers; in August, when the earlier shrubs have quite finished blooming, and before the later flowering ones appear, this comes with a most welcome profusion of flowers. This shrub has two faults; it is native, and a good specimen can be bought for a dollar. Were it Japanese, and sold at $5 or $10 a plant, it would probably be much more sought after. Several years ago, the Messrs. Parsons, of Flushing, N. Y., knowing the real merits of the Stuartia, were at much trouble and expense in sending a collector into the mountains of the Southern States, who procured a large stock of it. The Messrs. Parsons & Sons Co., of the Kissena Nurseries, Flushing, N. Y., inform us that their large stock is especially fine, it having been several times transplanted. We know of no shrub more attractive in a collection, or which is more worthy to stand as a single specimen than this Stuartia—in all localities except those in which the winter is very severe. Those who wish a single shrub to ornament a city front yard, may properly select this, as it will be in full bloom at midsummer, when their neighbor's plants are quite without flowers.

Propagating Plants from Leaves.

That plants may be propagated by cuttings is well known, as few persons, who have cultivated flowers at all, have not grown a rose or a geranium from "a slip," which is the popular name for what gardeners call a "cutting." But that some plants may be propagated from their leaves, is new to many. One plant, *Bryophyllum calycinum*, popularly known as the "Leaf Plant," was figured in June, 1876. The leaves of this, when they fall to the ground, form small plants from the notches on their edges. Several plants are regularly propagated by florists from leaf cuttings. A number of the showy plants of the *Gesneria* Family are multiplied in this manner, as are all of the Begonias, of



LEAF OF BEGONIA WITH YOUNG PLANTS STARTING FROM IT.

which *Begonia Rex* is the type. *Begonia Rex*, and its varieties, are among the most showy of greenhouse plants, as their foliage presents a great variety of color, and they are much used for greenhouse and conservatory decoration. Their leaves are large, and have very strong veins. To propagate them, the florists put a leaf on the sand of the cutting-bench, and make several cuts through its numerous strong veins. After a while buds appear at these wounded places, and these develop into plants, as shown in the engraving, from a leaf furnished by Peter Henderson, Esq. Some florists cut the leaf into little pieces, which are laid upon the sand, and produce the same results. Those who wish to try this method of propagating, should take care to give the leaves proper shade, else they may dry up before forming roots. Many other plants have been propagated from the leaf, including the orange and the rose. But, besides for certain Begonias, it is employed, in a practical way, on a number of the succulents, such as Echeverias, Kleinias, Pachyphytums, etc. The well-known method of propagating lilies, is really propagating from the leaves. The fleshy scales of the lily bulbs, which are broken off, and treated as cuttings, are only the thickened bases of the lily leaves, and though their upper green portion has dried away, the scales are really leaves. No doubt the number of plants that may be multiplied from leaf-cuttings, may be largely increased, and it offers an interesting field to those who wish to try experiments.

A DANGEROUS PET.—Several of the English papers have given accounts of a remarkable parasite which, in the Glasnevin (Scotland) Botanic Gardens, has adorned the stems of a *Forsythia*, "with a dense entanglement of pearl-colored, Lily-of-the-Valley-like flowers, smelling as sweetly as a Heliotrope," and much more in the way of enthusiastic description; after this we are told that the plant is one of our American Dodders, *Cuscuta Cephalanthi*—the correct name of which, by the way, is *C. tenuiflora*. We should think that English cultivators had had sufficiently disastrous experience with their Clover and Flax Dodders, to make them cautious how they naturalize this larger-flowered and more showy American species. Should this become established, it may prove as undesirable in their plantations as our *C. compacta* is with us. This, in some of our nurseries, has proved to be a real pest, attaching itself to and living upon the young stock, and exhausting it much to its detriment.

Forwarding Lettuce—A New (?) Way.

BY PETER HENDERSON.

The other day, in riding out on the N. J. Central R. R., I had occasion to go a short distance across the country, south of Plainfield. I noticed an old colored man digging parallel trenches 2 feet apart, about 6 inches deep, and 10 inches wide. He had just completed about a dozen of them some twenty feet in length, and had begun to scatter manure in the bottom of the trenches to be dug in. I was completely puzzled by the operation; he was evidently at some kind of gardening, but such trenching, in the middle of February, I could not understand. On questioning the old man, I found that these were his forcing pits for Lettuce—which he planted 6 inches apart in the trenches, and covered up at night and in cold days with single boards a couple of inches wider than the trenches. This method, he assured me, he had practised for many years, getting his lettuce two or three weeks earlier than when planted without such protection. He was careful to take off the boards and expose the plants to the light on mild days. His "frame ground" had been well chosen, it being a sheltered, rather sandy spot, facing the south. I suggested to him that his "pits" might be used for protecting tomato plants, after his lettuce was cut, but Sambo had nothing to learn from me; he had always used them for that purpose, only digging his trenches deeper; and had raised, he said, the best "tomatuses" in the neighborhood, from plants set out in his trenches about May first, after his lettuce had headed up. Sambo's forcing pits were not extensive—they only held about 600 lettuce plants; but these brought him five cents a piece at the village groceries, and it was certainly a productive industry in a small way that is worthy of imitation.

The Catalpa and Its Uses.

Prof. C. S. Sargent, Director of the Arnold Arboretum, takes a lively interest not only in trees as *trees*, but also in their uses; thinking that the merits of the Catalpa had been overlooked, he was collecting materials for an article for the *American Agriculturist*, when he came across a pamphlet entitled: "Facts and information in relation to the Catalpa Tree, (*Catalpa bignonioides*). Finding his proposed task so well done by the author, Prof. Sargent, in the following note, gracefully gives full credit to another worker in the same field. He says: "Mr. Barney has brought together, in a pamphlet of 26 pages, (which may be procured from the author, E. E. Barney, Esq., Dayton, Ohio,) several letters contributed by him, at different times, to the "Railway Age," in regard to the Catalpa, to which are added much testimony and information in regard to its economic value. By what must seem most satisfactory evidence, it is shown that the wood of the Catalpa, although soft and comparatively light, possesses, to a remarkable degree, the power of resisting decay, in this particular equalling and even surpassing the Locust. He claims that for rail-road sleepers, the wood of no other tree, which has yet been tried for the purpose, compares with it. The qualities which make a tree profitable to raise for sleepers are: that it should grow rapidly and easily; that its wood should be durable when exposed to the weather, and neither too hard to properly hold spikes, or too soft to resist crushing by the pressure on the rails. These qualities, Mr. Barney proves, are combined in the Catalpa; and his pamphlet, containing also many excellent cultural suggestions, is a welcome addition to the arboricultural literature of the day, and should be circulated among all who interest themselves in our forest economy, and the railroads of the far West."

One Grape Vine.

FIRST ARTICLE.

We can not conceive of a place, unless in a tenement house in a crowded city, where one can live, and not have room for at least one grape vine. Most of those who live in villages, have room for several vines, and those who live on farms have room for all the vines they care to plant. Several years ago we had occasion to call upon a distinguished general of the U. S. Army, who was stationed in New York City. Our business over, he took us into his back yard, probably 25 by 50 feet. We found along the fences some 8 or 10 grape vines, all properly labeled. We asked for how long he had taken the house. He informed us, for a year, but was liable to be ordered off at any time. We remarked that he could get no returns from his vines until the next year. He replied that he was well aware of that, but he made it a rule, wherever he went, to plant vines, for, he said, "somebody will get the fruit from them." We had heard of this officer's heroism when on the staff of Gen. Scott, in the Mexican war, but this remark, "somebody will get the fruit from them," showed him to be a good as well as a great man. "Why do people have so few grapes?" is a question that has often puzzled us. Go over the country, and we find the farms that have an abundance of grapes are few, while those who have none are in the majority. Those who live in towns and villages, with

but a few feet of land, will have grapes in abundance, while those who have 50 or 100 acres, or more, are without this welcome fruit. Why is this? It certainly can not be the cost, for 25c. to 50c. is the average price of vines. We think it is from some feeling that vines are difficult to manage, that there is some "mystery" about pruning that they cannot master, that prevents the general planting of vines. Now we advise every one who has the land—and if that is but 10 feet square, it will hold several vines—every farmer, who would provide his family with this most acceptable fruit, and, we may add, would increase the attractions of home, to plant out grape vines. It must be a strange farm that can not find a place for them, as we have over 50 vines in a space 200×100 feet, and all in full bearing. There is nothing about the vine, its training and pruning, that any one can not understand. We head this article "One Grape Vine," because what may be done with one vine, may be done with five, or fifty, or more. The first question will be,

What Kind Shall I Plant?

As a general thing, if one knows nothing about vines, and is to put out but one, we say plant a "Concord." But we do not advise any one who has the room, to restrict himself to one, so we add as a list to choose from, Delaware, Creveling, Hartford Prolific, Barry, Wilder, Brighton, and Eumelan.

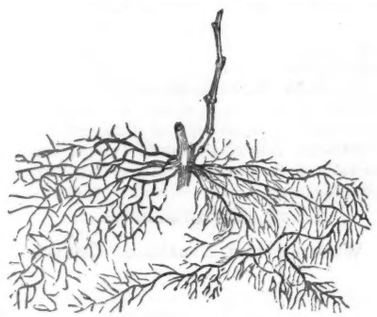


Fig. 1.—VINE AS RECEIVED.

These are all good, as family grapes, though not equally good market sorts, and are generally successful. Now, when you order a vine from a nursery,

What do you Get?

If the nurseryman understands his business, you will get—not a big vine—but a copious root, with a stem having, perhaps, three or four buds upon it. When you get the vine or vines, make the soil mellow—never mind manure now—open a broad hole, spread the roots, and cover them about 4 inches deep. But, before setting the vine, put down a stake, about 6 feet high, and plant the vine with the stem close to the stake. Spread the roots well, have them covered with the best of the top-soil,

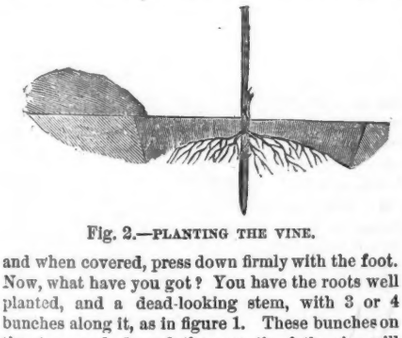


Fig. 2.—PLANTING THE VINE.

and when covered, press down firmly with the foot. Now, what have you got? You have the roots well planted, and a dead-looking stem, with 3 or 4 bunches along it, as in figure 1. These bunches on the stem are *buds*, and the growth of the vine will start from them. Watch them well. You will find, perhaps, that the uppermost swells and breaks first, then the next below will break, and after that the others. The first thing to do is to rub off all but the two best and strongest of the buds, and when the uppermost, or the next below it, has made a shoot long enough to tie to the stake, tie that to the stake with a piece of soft cotton twine, bass matting, or whatever will hold it without cutting. And then break off the other shoot—you will hate to do it, as it looks so promising, but the only way to *start right*, is to grow but one shoot the first year, and to keep that tied up to a stake as it grows. Certainly there is nothing difficult about this, and whoever does it, with one vine, or one hundred, will have made a fair start. Let the vine grow, keeping it tied up, and later, we will tell what to do with it.

Where to Plant Vines.

Anywhere, where there is six square feet of soil. They may be trained to special trellises, and this is necessary where there are many, but a vine may be trained to a fence, to the side of a shed, or a barn, or to the dwelling house. Once understand the manner of the growth of the vine, and it may be put almost anywhere.—How the vine grows, we shall try to show in other articles. In this we insist upon planting, at least *one vine*, but hope that those who have the room will plant many more, and we also insist that the vine shall be treated properly, and be allowed to form but a *single shoot* the first year. An old vine with several feet of stem and little root is not worth planting by any one.

About Irrigating our Gardens.

The sight of the wonders wrought by irrigation in Colorado and California, some years ago, stimulated me to try the experiment, on a small scale in a new garden, for the last two seasons. I came into possession of an old gravel pit, upon a side hill, covering about three-fourths of an acre. The soil in the highest part of the lot had been removed to the depth of twenty feet or more, some twenty years ago, for the purpose of making wharves in the village. Nothing was left but hard-pan and gravel. In the bank a spring had been struck, where the water oozed a little, all summer, and run a small stream during the winter. The surface soil below had never been planted, and bore nothing but coarse grasses and weeds. A part of it was deep mire in winter, and not dry enough to plow in spring until late in May. A more unpromising piece of land for a garden could hardly be found. Tiles were laid to the depth of three feet, completely removing the surface water, and making early plowing practicable. Being without stable manure at the time, I used coarse sea-weed to turn under and loosen the soil, and applied a compost of fish-scrap and soil, in the hill. The yield of corn, potatoes, cabbages, and turnips, was much better than could have been expected. The soil improved every year, and the crops grew better. Two years ago I thought of turning the spring to practical account far irrigation. It had been previously cleaned out and deepened, and a pool about ten ft. square had been walled in, to furnish a small pond for ducks, and also to convey water to the hen-house. The waste-water, which would not more than fill a half inch pipe in summer, ran off into the tile-drains and benefited no one. On the dryest part of the gravel bank below, squashes and melons were planted. A few troughs of hemlock slats were made, and the water was put on to the melon-patch early in July. After the vines were well started, the stream was kept in one place for a day or two, until the ground was thoroughly soaked, and then changed to other hills, until the whole patch had been irrigated. Although the soil was poor, and the only manure was that in the hill, the growth of vines was luxuriant, and there was a very fine crop of nutmeg and water-melons. Owing to the depredations of the bugs, the squashes did not succeed so well. Last summer the experiment was repeated with still better success. In hill-countries, like many parts of New England, there are thousands of places, where gardens and fields can be irrigated from surface streams, at very small cost, and thousands more, where wells and wind-mill pumps would make water available for the garden. We may safely calculate upon doubling our crops by the timely supply of water through the growing season. It would be a complete safeguard against drouth, and would be helpful every season. Water enables the plant to make the best use of the manure given it, and to get large supplies of food from the soil.

CONNECTICUT.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

After the Kindergarten.

Some good soul—a reader of this journal, I fancy—has sent me a few numbers of the new "Primary Teacher." In the second number is an article by Mrs. Hopkins, giving an account of one year of her teaching in a city of Massachusetts. I read this article with the greatest delight, and have re-read it about a dozen times. I want to copy every word of it here, but of course that would never do. Besides, I have become aware that this very article awakened quite varied sentiments in different readers. Colonel Higginson sent it to the "Women's Journal," recommending its perusal to teachers and mothers. This has called out some responses from teachers, who express themselves shocked by the amount of learning accomplished by Mrs. Hopkins' pupils. Let me see if I can tell briefly some of the work done in her little private school of girls from eight to fourteen years of age. The only previous education of the younger ones had been a good Kindergarten. They got quite a clear vision of the course of events in this country for 200 years past, from Higginson's "Young Folks' History," went through Dickens' "Child's History of England," and had the prominent points of Greek and Roman Mythology from reading "The Age of Fable." They reviewed Miss Hall's "Primary Geography," which had been read to them in the Kindergarten, then took the higher geography and went nearly through the geography of the United States. After some language lessons, they found to their joy that they knew grammar already, so they left that to take care of itself, and went on to dictation exercises and composition. Reading and spelling they learned by having constant exercises in one way or other.

It was found necessary to restrain their excitement, somewhat, in the mental exercises of arithmetic, though they had frequent exercises, and became very quick and skillful in rapid calculation. They studied the fundamental rules, applying numeration to fractions, decimals, U. S. money, compound numbers, the metric system, etc. All these were treated as varied applications of the simple rules of numeration, addition, and subtraction.

They learned also from Prof. Gray's "How Plants Grow," and Miss Youman's little Botany, (at least they learned on her plan), analyzing flowers readily, and enjoying much of the higher and more delightful developments of botany. They studied the forest trees by walks in the woods, and reference to Mr. Emerson's book. They learned what Morse could tell them in his "First Book of Zoölogy," Mrs. Agassiz in her little "Sea-shore Book," and read together other books on land snails, butterflies, and other insects. They learned from books and pictures about our native birds. They had a teacher for drawing, and a French woman to talk French with them, learning by heart a few fables, and playing a French game with their teacher. They studied German in much the same way, reading at last with delight "Grimm's Tales" in German.

All this was done in one school year by children averaging ten years of age, though some had entered their teens. There was no constraint, no emulation, no rule of morals or manners, except such as they saw to be the necessary conditions of attentive study and good manners. Mrs. Hopkins hoped in the following year to advance her pupils as much in love of study, desire to learn, development of their faculties, and attainment of knowledge, as she felt had been done in the past year.

What is Said on the other Side.

Those who criticise this article protest against such "pouring into" the minds of children, suggesting how difficult it is to battle with the natural tendency of such children to distraction and thought-wandering. They forget that the younger ones of Mrs. H.'s class were trained in a Kinder-

garten, and as she says, "of course they were wide-awake and fresh for study." I know myself the difference between reading aloud in the family to children who are accustomed to pay attention, who delight in the reading selected for them, and to children who are not accustomed to such experience, and who distract others and look about for something to play with while I read. The work accomplished in Mrs. H.'s school, could not be done in a public school, unless the children had been previously trained in a Kindergarten.

Education at Home.

This report of what Mrs. Hopkins had accomplished pleased me, it came like good tidings from the future. I had seen one ten-year-old boy get what seemed to me "quite a clear vision of the course of leading events in our country during the last two hundred years," without any "memorizing" and with only one careful, though often interrupted, reading of the "Young Folks' History of the United States," read aloud by myself. I had seen the same child's delight at the age of five, in Mrs. Agassiz's "First Lesson in Natural History," and a year later, had seen how fast he gained a knowledge of physiology from my reading aloud a little at a time, that capital book, "History of a Mouthful of Bread." I had seen how he picked up for himself, without book or single teacher, the names of all the forest and ornamental trees he came across. Then I know, too, how the Swede and German children, among whom I have lived in the West, learn to speak two languages, quite correctly, when very young. More than all this, I have seen how almost all children are starved and stunted mentally, because we parents are too ignorant or too busy with other things to give them answers to their questions, and to surround them with conditions favorable to healthy mental growth.

Mental Strain.

But there is another side. I would not leave this subject of education here without an earnest word of warning against overtaxing the minds of children. Mental strain is like any other strain—of the back, or of the eyes, for instance. It may be slight, and excite little attention, or so severe as to get the name of "arrested development," or result in idiocy. I have known of children, who were wonders in their ability to learn and recite little verses, and in learning the alphabet, who suddenly came to a stand-still—hated all lessons, and afterwards learned with great difficulty. One little girl, who had been through an experience some like that, told me, when a dozen years old, that she didn't know why, but she could not put her mind fully upon anything. It would always wander in spite of her efforts to pay attention. Rest is the cure for a strain; rest for the mind when the mind is weary, and a long rest with a change to out-door amusement, when the mind has been seriously overtaxed.

Unbleached Window Shades.

Mary has been keeping house so short a time that she has no old "duds" to work over into cheap curtains. I don't know as she can do better than to take unbleached factory cloth. She can make drapery curtains of this if she likes, but if, like me, she wants to see out, and let the light in during the day, she will prefer shades. If her cloth is too wide for the window, she can make a broad hem each side. Then she may trim it with a narrow strip of some bright color—cheap worsted dress binding is most easily managed, though plain calico that will not fade may be used. The shades may be tied up by cords and tassels of the same color. If worsted dress-braid is used, the same will do for a cord, allowing enough in length for a generous bow when the shade is rolled up. Lambrequins of the same color in calico, flannel, or any material, of any pretty style, (the pattern books usually give them, or give an idea how one can make them without a pattern), give a pretty finish to the whole.

Rice and Tapioca Pudding.

In a pint of water, soak over night half a teacupful of rice and half a teacupful of tapioca. In the morning, add to this, cinnamon, or other flavoring; half, or three-fourths a teacupful of raisins; three-fourths a cupful of sugar, and a quart of milk—a *little* more milk (or water) if you put in the raisins. Mix well, bake two hours, and eat cold.

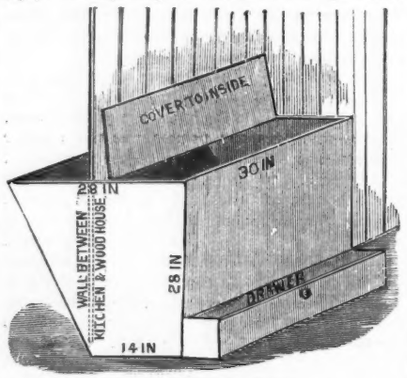
This is a good pudding to make when eggs are scarce, or dear. I have found, too, that the milk used may be diluted nearly one-half, as milk grows scarce, by adding a teaspoonful of butter. But eggs are beginning to be plenty, as I write, and when this reaches my readers they will be at their cheapest and best. So here is a good recipe for

Tapioca Pudding with Eggs.

Soak one teacupful of tapioca in a pint of water for two hours or more. Add one quart of milk, and set it where it will heat gradually, without burning, stirring it occasionally until it seems quite soft. Set it where it will cool a little, while you beat well together the yolks of five eggs, one tablespoonful of butter, and half a teacupful of sugar. Stir this with the milk and tapioca, then add the beaten whites. Bake in a buttered dish. It is not necessary to soak tapioca before making into a pudding, if you heat it gradually in milk or water, stirring as it swells and softens—all this before you mix it with the other ingredients of the pudding.

Another Wood-Box.

In February last, we gave a rather elaborate design for a wood-box, and several others will be found in former volumes. In those places where wood is the fuel, it is found to be bulky, and to bring in that dread of the neat housekeeper—*dirt*. Hence some device for holding the wood, is necessary. We have, in former volumes, given neat wood-holders, for use in the sitting-room. We now give one for the kitchen, where the demand is constant, and should be supplied in the most convenient manner. Our correspondent, "H. T. S.," Wayne, N. Y., sends a device which will be useful where, as is often the case in country houses, the wood-house immediately joins the kitchen—a most convenient arrangement. His wood-box, as he says, "is only adapted to those dwellings where

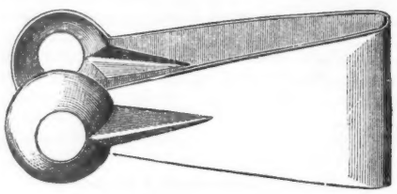


WOOD BOX IN PARTITION.

the wood-house is next to the kitchen," as it should be where wood is the fuel. As shown by the engraving, the partition wall between the kitchen and wood-house is cut away, to allow the box to be supplied from the wood-house, and to deliver it where it is to be used—in the kitchen. As our correspondent says, "this will save many steps, and avoid much litter," two things every farmer's wife—indeed any other wife—will appreciate. The engraving sufficiently explains itself. The partition is shown with the parts of the box on each side, and the measurements of the box are given. The drawer at the lower part is for kindlings, and any of the stove appliances not in constant use.

A Strawberry Huller.

Where strawberries grow with a distinct neck, the operation of hulling is easy, and no aid is required to the fingers of the operator. But many varieties, especially those that produce very large berries, have the hull (or properly speaking, *calyx*), so closely attached to the fruit, that it is troublesome to remove it by the use of the finger and thumb, and when, as is often the case with the large berries, they grow in the "cockscomb" shape, the calyx is so malformed, and partly covered by the shoulders of the fruit, that it is impossible to remove it neatly without using a knife. We have seen two or three devices for hulling strawberries, but none so simple and practical, as that made by A. S. Bunker, of Lawrence, Mass. It consists of a pair of forceps, or tweezers, of the form shown in the engraving; they are apparently of brass, and silver-plated. Mr. B. sent us his huller too late



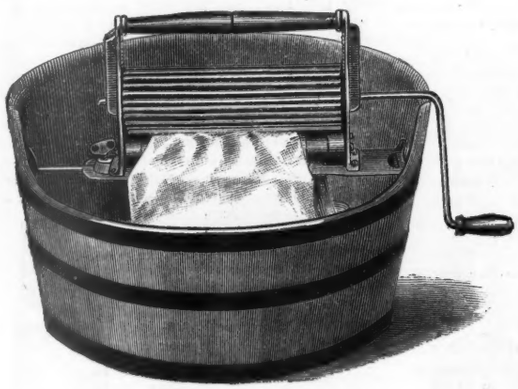
BUNKER'S STRAWBERRY HULLER.

last season for us to notice it then, and we now call attention to it well in advance of "strawberry time," at least in the Northern States, as an exceedingly useful little affair. As we preach for an abundance of fruit for others, we try to practice it for ourselves, and as in the season, strawberries are served usually three times a day, we had a fair chance to test the utility of this huller. Like most useful affairs, it is very simple, and its peculiar form allows it not only to save the fingers where the hulls present no especial difficulty, but with troublesome and cockscombed berries, it allows the calyx to be cut out neatly and quickly and leave the berry in a presentable condition.

Washing and Washing Machines.

Whatever may be the liquid used in washing, whether it be hot soap-suds, cold river water, with the "soap-root" of the Mexicans, or some of the various washing compounds, the mechanical operation is essentially the same. The Mexican woman souses your shirt in the river, lays it on a flat stone, and pounds it vigorously with another stone, regardless of buttons; others use a board and a stick; others put the clothes into a barrel and pound away at them with a heavy pounder. These primitive washing machines act upon the same principle, as do the more simple methods of rubbing the fabrics between the knuckles, or rubbing them upon a wash-board. In each and all of these, the pores of the fabric are filled with the water or suds, which is more or less violently squeezed out again, carrying with it the various soiling matters known by the comprehensive term *dirt*. We fill the clothes with all the water they will hold, and squeeze, rub, or pound it out again, and repeat this again and again, until the soiling matters are either dissolved out or are carried off mechanically by the liquid. The number of machines that have been contrived to perform this simple operation, and take the place of the knuckles, whether used against one another, or against the grooved washing-board, is beyond computation, some of them being ponderous and complicated, others almost as simple as the old pounding barrel, but in each the object is to fill the fabrics with suds and squeeze it out again, and those are most effective that most closely imitate the rubbing upon the wash-board. Hundreds of machines have been invented, but there is not one that may be said to have come into anything like general use. This is not from any fault in the machines themselves, for some of them are very effective, but from a strange perversity on the part of the very people whose labors they are intended to lighten—the working women, or "help." The average kitchen-maid, if she displays no tact or ingenuity in anything else, shows a wonderful ability in preventing a washing-machine from working, and the mistress, for the sake of peace and clean clothing, allows the servant to do the washing by "main strength and stupidness."

Hence it rarely happens that these machines are used, except by those housekeepers who do their own work. A machine of any kind requires a certain amount of intelligence for its effective use, and this applies to washing-machines as well as steam-engines. The domestic labor-saving machine that, of all others, has been most generally accepted by the maid-servants, is the wringer; the utility of this was so manifest, and the contrast between turning a crank with ease, and wrenching the muscles of the arms and upper part of the body generally, in twisting the water out of a large sheet, so great, that in most cases prejudice gave way, and the wringer tolerated. Perhaps its resemblance to a wringer is one reason why the "Walker Washer" has so rapidly become popular, and has been used by those who could see no merit in machines of other styles. This washer, of which an engraving is given, is easily attached to any tub, whether square or round; a couple of sockets are screwed



THE WALKER WASHER.

to the sides of the tub, on the inside, and the machine can be put in place or taken out, in an instant, to allow the tub to be used for other purposes. The base of the washer is so arranged, by means of a sliding rod and set screw, that it will fit a tub of any size; this is shown in the engraving, a portion of the tub being cut away to allow the whole of the machine to be seen. The general construction of the washer is much like that of a wringer; the upper roller is of wood, and fluted; this is, by means of springs, pressed closely against the lower rolls, of which there are two, also of wood, and provided with broad rubber rings set about an inch apart. The clothes are soaped on the most soiled parts, and made up in convenient parcels; thus several small articles are laid inside of a larger one. The tub being furnished with *hot suds*, the clothes are passed between the large roller and the two smaller ones, back and forth, for a few minutes, the time being governed by the character of the articles. Here we have the principle already spoken of: the fabrics are filled with hot suds, this is firmly pressed out of them by the rollers, and they pass on the other side into suds again, and by the reverse motion this is again squeezed out, and so on alternately and rapidly, with the effect of removing the foreign matter, and little wear of the clothes. This being the structure and action of the washer, we have only to add that the writer has tried it for some time, and finds it to work in an eminently satisfactory manner. It is simple, easily worked, and moderate in price. This machine is manufactured by the Erie Washer Co., Erie, Pa., who give other particulars in our advertising columns.

Sensible Advice about Eggs, comes from a friend, "J.," Hartford, Conn., whose approach to the age of 80, shows that he has paid proper attention to his diet. He says: "I suppose it is generally admitted, that the best way to cook eggs, so far as health is concerned, is to boil them *soft*, say three minutes. If they are boiled three minutes, the white will be cooked *hard*, and the yolk will not be cooked at all. This way, therefore, does not allow us to cook eggs so as best to promote health. Eggs *should not be boiled at all;* they should be "coddled" and perfectly soft when cooked.

How to Coddle Eggs.—Put the eggs into a vessel of water at a temperature of one hundred and seventy (170°) degrees Fah., and keep the water at that temperature from ten to fifteen minutes, when the eggs may be taken out, and the white will be a fine jelly, and the yolk will be cooked soft. The temperature should be tested by a thermometer, not *guessed at*. The quantity of water should be so large, that the introduction of the eggs will not materially reduce the temperature.

The Tin Pan Nuisance.

BY M. W. F., BRYN MAWR, NEAR PHILADELPHIA, PA.

"*If* I were Duke of this country," began Anaximander one evening, as we were enjoying our daily drive through a section of country of unusual elegance, "I would punish with banishment every man or woman who threw tin trumpery into the street."—"Amen," said I, "and send them out of the country with a string of oyster cans for a necklace."—His remark was born of no new spectacle—we had seen the like a hundred times before—but in this instance it was especially aggravating. There was a large country-house on a noble eminence—a beautiful lawn extending in front to a fashionable avenue, and at one side to a public road, not fashionable, but greatly traveled, and in a small ravine that made a gap under the fence and opened into the roadside gutter, was tumbled a mélange of old tin-ware—coffee and tea-pots, pans, cups, watering pots, innumerable fruit and vegetable cans, and broken crockery. It was such an ugly blotch on the otherwise fair beauty of the place, that one could not but wonder at the sight. What to do with such old trumpery, that cannot be burnt, seems to be an unsolved riddle with the majority of country people. In cities, the housemaid stuffs it in a barrel, which the ash and garbage-men carry away. In the country, it is commonly pitched into some out of the way place, under porch floors, into vacant cellars, under currant bushes, etc., but always where in some moment it is discovered, and is as unsightly to the eye of the lover of nature, as would be an eruption on a fair woman's face to a lover of the human race.

So far as my own experience goes, I know of no better way to dispose of broken and worn out wares, than to put them into a well dug for the purpose—one which has a cover, and which, when full, can be earthed and grassed over. Such a receptacle has its advantages—one always knows where to look for old basins and pans, if they are needed, for broken pottery when pieces are required for drainage, while bits of glass are thus put forever out of the way of the children's feet. If any body knows of a better way, let him make his method known in these columns, from philanthropic motives.

I must think, too, that the sight of old tin "lying around loose," has a charm for some people, judging from the way they distribute it in their back-yards and front ditches. A man's back-yard is his private property, and if he chooses to make and to keep it a hideous looking place, it is an affair between himself and his conscience; but the man who makes a public highway the receptacle of his trumpery, should be prosecuted by the Commissioner of Roads, or some other apostle of public weal and public decency, and punished as a polluter of public morals. To be brought face to face with such unsightliness, is like an "evil communication" which corrupts good manners. There is a manifest indelicacy, as well, in allowing such broken and worn out domestic utensils to remain exposed to public view, and belongs to the same strain of untidiness and vulgarity that throws old shoes and crinoline in the street. So we advise, that every farm-house have its well or pit for unsalable and unburnable trumpery, and thus bury so much of ugliness from the face of the earth.

BOYS & GIRLS' COLUMNS.

Aunt Sue's Chats.

AN INTERESTING GAME.—WORD MAKING.

S. F. BENNETT.—The most fascinating "game" that I have seen for a long time, is played with letters, and is called "word making;" or, if you prefer a more classical name, "Logomachy." Provide yourself with a box of letters. These may be had at the book and stationery stores, and contain several alphabets, each letter upon a separate small card. Any number of persons can play, but it is most enjoyable with three or four. To begin the game, let one person draw one letter from the box without looking at it; he places it right side up upon the table, in front of him; if it be A, O, or I, he can keep it as a *word*. The next person draws (say) Y, and not being able to make a word of it with the O (face up) by the first player, he places it in the pool on the center of the table. Number 3 draws (say) R, takes No. 1's O, and makes "OR." No. 4 draws E. He might then take the Y from the pool, and make "YE," but he prefers to take No. 3's "OR," and make "ORE." No. 1 draws again, (we are supposing that four persons are playing), and draws the letter B; he takes Y from the pool, and makes "BY." The words made, are placed in front of those making them, face up upon the table, and kept there until some one, by adding one or more letters, to form another word, takes one from its previous possessor. Who ever first gets ten words, wins the game, provided all the other players have played without being able to deprive him of one of the ten.

To make it plainer, let's use a diagram, and suppose that four persons are playing. Before them on the table are the words seen in the diagram. No. 4 draws the letter U, looks round the table to see what he can do with it, as it is generally preferable to take a word from some one of the other players, rather than to make a new word from the pool. He might make "BUD" by drawing from the pool, but he prefers to take No. 2's "HOG," and by adding to it the U, just drawn, and the C from the pool, he can make "COUGH;" then he takes the D from the pool, and adds it to his own "OFF," making "DOFF," and laughs at No. 3 for not having seen it. No. 1 then laughs at No. 4, the latter having finished, for not taking his "BE," adding the B from the pool, and making "EBB," which he proceeds to do himself before he uses the E that he has just drawn. With that he might make "FEZ" with the F and Z from the pool, but he prefers to take No. 2's "FROG" and make "FORGE" with it.

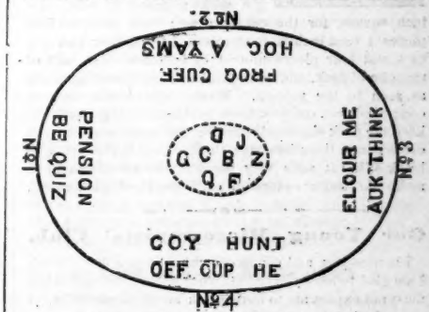


DIAGRAM OF WORD-MAKING GAME.

The foregoing illustration will show you that you can make a word at any time before drawing, if you happen to see a letter in the pool that you can weave into a word of your own, or some one else's. The right to use the letter drawn from the box, is not forfeited by forming a word from the pool. No *part* of a word can be taken from any player; the whole word must be taken, or none. You can not take one word from a player, and add it to a whole word of your own by merely adding a letter or two. For instance, if No. 1 has A, and No. 2 has I, No. 3 can not take the two, article and pronoun, by merely adding a D to them, ("AID"); if they were merely letters in the pool he could do so, or if No. 1 had A, and I were in the pool, *then* No. 3 could take the A for his "AID."

No word can be taken by simply changing it from a singular to a plural noun. If No. 1 had MITE, you could not make it MITES, and take it, but you could appropriate it by *transposing* it into "TIMES," or "ITEMS;" somebody's S could turn that again into SMITES. You may add an S when you turn a noun into a verb, *e. g.*—DANCE, DANCES; JUMP, JUMPS; CUFF, CUFFS; etc. You may add an S to pluralize one of your own nouns at any time. Proper names, geographical names, or foreign words, are not allowed. The dictionary must decide a question when the players are in doubt.

Before beginning the game, it is well to discuss the

rules and regulations with regard to plurals,' obsolete words, etc., so that the players may be all of one mind.

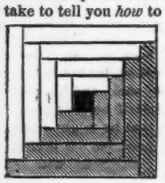
The game may be varied by making it sometimes entirely geographical or historical; another time it may be based upon authors or Bible names. In your anxiety to get your ten words, you will study your dictionary, and learn many a new word; and some of you will perhaps be surprised to find that there are such words as *mora, moresk, nider, nide, ait, brash, alb, abnet, toggle, etc.*

After the player has finished making all possible combinations, it saves time to draw the letter for his next turn, that he may be considering to what words he can add it. He can keep it hidden until his turn comes to play. It is well to put a watch upon the table, and decide before commencing the game that three minutes will be allowed to each person for consideration. If no word is taken from the party having ten words, before three minutes are up, the game is finished. If the player draws J, V, K, W, X, Z, or Q, or all of these letters, he has the privilege of drawing again, even though he has been able to add any of them to the others' words, or to letters in the pool. I should be pleased to get a postal card from any who try this game, and enjoy it.

"C. E. L."—The "Square" puzzle you send, was published in the *American Agriculturist* in October, 1877.

"J. K."—You will need four ounces of chinchilla worsted (single zephyr) for the "scarf," and three ounces of scarlet. One ounce of the latter is for the fringe. Set up 30 stitches on small wooden knitting needles. The "sontag-stitch" is a very pretty one for the purpose. The advantage of this stitch is, that there is no "right or wrong" side. In case you are not familiar with the stitch, I can make you acquainted with it in a very few words: "Slip one, thread over, knit two together." Knit ten rows of chinchilla, then half an ounce of scarlet, then ten more of chinchilla, and half an ounce of scarlet, (being careful to join your thread at the commencement of a row, never in the middle). Now knit the remainder of your chinchilla worsted, all but enough for the twenty rows beyond the scarlet stripes at the other end. Tie in your fringe. *Ribbed* scarfs are also pretty, ("two plain and two purled").

E. B. M. D. asks for "directions how to piece 'Log-cabin' quilts, and also how to net tidies, etc. I wish to net a bed-spread with white cotton."—I would not undertake to tell you *how* to net, for I know I should "get all tied up in a hard-knot" myself, if I should attempt it. I would recommend you to get a book which gives "instruction in knitting, netting, and crochet work." I can, however, help you to the "Log-cabin" pattern, one block of which is shown in the figure. Begin with a piece of silk, one inch square, for the center piece; then provide four pieces 1 by 2 inches, four pieces 1 by 3, four pieces 1 by 4, and four pieces more 1 by 5 inches. Let half of them be of dark, and half of light silk, and arrange them as seen in the pattern. When your blocks are all completed, you can join them together—being careful to keep the dark shades all running the same way—or you can separate them by strips, three or four inches wide, of black silk. It adds very much to the effectiveness, to make the center square (of each block) of black velvet.



Our Young Microscopists' Club.

I invited you, and you have come. Such a lot! Well, I am glad to have you tell me what you are doing, but you must not expect me to notice you all in these talks. I can only find space to notice those who wish their questions answered, and who tell something of use to the rest. One Minnesota boy, to whom a relative gave a $50 Microscope, wishes one of our instruments in order that he may belong to our "Club."....I was reading the other day, in a large work, about the Microscope, and came across something that I thought would interest you. The author stated that many of the figures given of the minute objects seen by the costly and powerful Microscopes, were not true, that they were due to what is called

OPTICAL ILLUSION;

that is, the impression upon the mind is a false one, and we do not always see things as they really are. He illustrated this by a series of round black spots, placed equally distant from one another and separated by a white space, as in figure 1. If you hold this about 18 inches from the eye, although you know the spots to be circles, if you look at them steadily, they will appear to be hexagons, or six-sided spots. I introduce this to show you that we can not always trust our eyes, but must look at all the things that we examine with the Microscope, very carefully and in various ways, looking at them as both opaque and as transparent objects ...Several have, from time to time, asked me about a swift moving, silvery looking little creature, now and then found in drawers, and among books that have not been disturbed for some time. Some call it

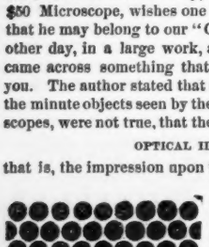


Fig. 1. DECEPTIVE SPOTS.

"THE SILVER-FISH,"

as it has a fish-like shape and a silvery color; in England it is known as the "Sugar-Louse." It is about one-third of an inch long, and of the shape shown in figure 2. It is really an insect, and belongs in that class of insects that have no wings, with the lice, ticks, mites, and others. Its scientific name is *Lepisma saccharina*. Its first or

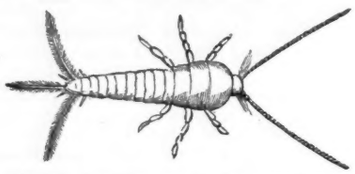


Fig. 2.—LEPISMA, OR "SUGAR-LOUSE."

generic name, *Lepisma*, is from a Greek word, meaning "to scale off," probably because its scales come off so easily, and its second, or specific name, *saccharina*, refers to its fondness for sugar. It is said to be very fond of sweetmeats of all kinds, and is charged with eating silks, and with injuring books, though some say that it is only found among books, because it is after the mites which do the mischief. However, I have never seen them numerous enough to do much injury. When you catch one, you will find that, by a touch, this silvery dust with which it is covered, will come off upon your finger; transfer some of this to a glass slide and examine it, you will find that each minute particle of that which seems like dust

IS A BEAUTIFUL SCALE,

and presents the appearance of figure 3. Though a small object for your Microscope, you can make out the form of the scales; some are long and fan-shaped, and others circular. You may be able to see the lengthwise lines if you are careful. This is one of the objects used to test the powerful Microscopes; an instrument of sufficient power will show not only the lengthwise lines, but cross markings. The scales on the

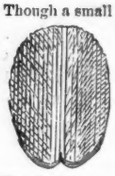


Fig. 3. SCALE.

WINGS OF BUTTERFLIES AND MOTHS

are much larger than these, and you will find them very interesting objects. Something is said about these on the circular that goes with the Microscope, and now that these insects will soon be about, you must be on the look out for them. Not only the scales of insects, but

THE SCALES OF SMALL FISHES,

will be found worth looking at as opaque and transparent objects. That you may see what pretty objects the scales are, I procured a few from such common fishes as happened to be in the market, that you may see how they look when magnified with our Microscope. Figure 4 is from the Smelt, a pretty little fish not found a great ways from salt water. When magnified, each scale looks like a beautiful shield with its surface wrought in delicate lines. A much more common fish is the Pickerel, which, in the course of the season, most of you will be likely to come across. Its scale is shown in figure 5. The notched

Fig. 4.—SMELT.

Fig. 5.—PICKEREL.

edge is where it is attached to the skin. Still more common is the Yellow Perch, found in almost every fresh water stream or pond in the country, and though so common, its scale (fig. 6) is one of the most interesting. Here you have some very distinct teeth or notches, and the opposite edge, the exposed part—or as carpenters say about shingles, the part "to the weather,"—appears quite different from the other; it is finely marked with lines, and at the very edge you will be able to see a very minute little fringe of points. These will serve as examples, but you will come across a great many other fishes, and no matter if they are said to have no scales—for many fishes pass for scaleless, because the scales are very small and hidden by the skin—examine the skin with your glass. When you come across an interesting scale, it is well to preserve a little lot, to have some to exchange with your friends. Scrape them off gently with a knife, and place them in a saucer, or other small dish of water. Stir them about gently with the finger, and when they settle, pour off the water; repeat the washing several times, or until they seem to be free from all slime; then place them on a paper—newspaper is better than glazed writing paper—fold it over, and put it under a book, or other weight, to dry. When dry, you can put them up in a fold of nice paper, and label them. In examining the scales you will often find a number stuck together, in which case you must pick them apart with your needles. You must look at them both as opaque and as transparent objects, and by carefully managing the light, you may find that it is not well to have too strong a light to see them best.

Fig. 6.—PERCH.

AS TO MOUNTING SCALES.

I am not quite ready to tell you about this, for I wish to try some experiments, to hit upon the way that will be easiest and the cheapest for you. They will keep perfectly well until you are ready to mount them.

In the pools of water found almost everywhere, especially in spring, even if they dry up later in the summer months, you will, if not this month, next month or later, find on the surface an abundance of

GREEN SCUM, OR "BROOK-SILK,"

as it is often called. If you take up a bit of it, you will find it is made up of fine threads, as fine as, or finer than, the fibres of silk. You will often find this of interest to examine with your Microscope. These threads are really plants, and belong to the great family of *Algæ*, of which the seaweeds form so large a part. These *Algæ* are flowerless plants, that is, have no regular flowers and seeds, as do the plants we are most familiar with, and they are often very simple, consisting of just a minute little cell, or sac—just a microscopic bag—without roof, stem, or leaves, and yet be a complete plant, which is multiplied by breaking up into other little bags like itself. But our Brook-silk is not so simple as this; it consists of longish cells or bags, placed end to end, as in figure 7. There are many kinds to be found in our waters, and you may not all find what I am about to describe.

7. BROOK-SILK. 8.

The threads of some of the Brook-silks, when magnified, appear as in figure 7, transparent long cells, with green matter inside, and this is often arranged in spiral regular coils. The whole mass as it floats on the water is like

A BRIGHT GREEN SCUM.

Later in the season, you will find this scum looking dull, and much of its green color faded. Examine it from time to time, and you may be fortunate enough to catch it at the right time to see its curious manner of multiplying. Several of these plants behave in the manner shown in figure 8. In two threads laying side by side, the cells (or joints,) will bulge out towards one another; at length the projecting parts of the cells will meet, and grow together, the division between them will break away, and all the green matter in one, will run over into the other; the contents of the two cells thus joined will form an oval green mass, seen in the upper part of figure 8, which is called a *spore*, and answers to these plants the same purpose as seeds do to common plants. When the cell breaks up to allow this to escape, it will probably fall to the bottom and wait there until next spring to continue the growth. I do not expect that all of you will succeed in seeing this, but it is worth while to try....Among the things to be looked for in the spring water pools is the

"REVOLVING GLOBE."—*Volvox Globator.*

I do not know how plenty it is every where, but when I lived in one of the Western States, I could hardly go amiss for it. Where there was a water-hole, a pint of water dipped up from it, would be very sure to contain several of these curious globes. It is just large enough to be seen by the naked eye, and if you get a jar of water from such pools, and can see a very tiny globe swimming around in it, you may be pretty sure that you have the *volvox*. But if your jar holds a quart, how are you to catch it? The microscopists have a very neat trick with

THE "DIPPING TUBE."

This is a glass tube of six inches or more in length, and about the diameter of a common lead pencil. Druggists generally keep glass tubes of various sizes, and will supply one for a small price. A tube of this kind is fre-

quently required to catch small objects that we wish to examine. Suppose we have a jar of water in which the *volvox* is seen traveling about. You take the tube in hand, with the forefinger pressed over its upper end, as shown in figure 9. So long as the upper end of the tube is kept closed, no water can enter the lower end. Now if you direct the lower end of the tube, keeping the finger closely pressed over the upper end, towards the *volvox* or other object which you wish to catch, even if no nearer to it than half an inch or more, and suddenly remove the finger from the upper end of the tube, the water will at once rush into the tube, and carry with it the *volvox*. Now put the finger again over the upper end of the tube, and lift that from the water. It will hold the water, and whatever you have caught. Having your *volvox* in the tube, you wish to get it into the *cell* of your microscope. Here no description will help you, you must exercise tact. You have perfect control over the water in the tube; by letting the air in from above, by the slightest raising of the finger, the water will flow out at the lower end. I could show you in a minute how to get the *volvox* from the tube to the cell, though I can't readily describe it, but if you have any *gumption*, you will, if not at the first trial, succeed at the second attempt. Having the

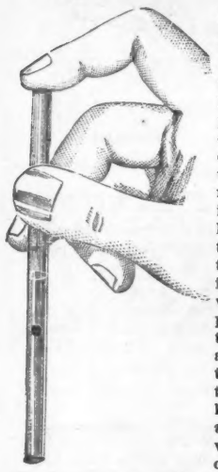


Fig. 9.—DIPPING TUBE.

REVOLVING GLOBE, OR VOLVOX,

in the cell, you will examine it, and a puzzling thing you will find it. A globular, greenish body that moves about, going around and around, in a most knowing manner; and you will say: "What a curious little animal." But it is not an animal at all; it is really a plant, or rather a collection of plants. You know that the plants you are most familiar with, are fast rooted in the ground, and do not move at all. But there are some water-plants that act so much like animals in their movements that they were for a long time considered as animals. The *volvox* is only one of these strange plants that move about in the water. As you look at it under the Microscope, having placed it in the cell, with a few drops of water, it will appear as in figure 10, a globe with green spots all over it, and it may be you can see the hairs on the surface, which, by their movements, make it sail about. I can now only tell you about this strange object, that it is a colony of distinct individuals collected in a globe form. Each individual plant is a little green bag, with two hairs, as in figure 11, and many of these unite to make the globe, all with their hairs outward, and as these hairs are capable of rapid motion, they roll the whole along very curiously. Before I can tell you more about the *volvox*, I must examine some myself, to see how far our Microscope will show its history. As it is large enough to be seen by the naked eye, I know that it will be worth looking for, and that its movements, should you catch it, will afford you much amusement....I wish to suggest, as a great help to the Microscope,

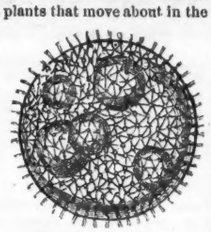


Fig. 10.—VOLVOX.

11.

A LITTLE AQUARIUM,

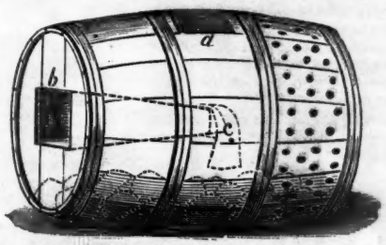
which may be any glass vessel, a common fruit jar, answering as well as anything. Into this you can put various water-plants, with water from a pool or pond, and you will find numerous things in the jar that you can catch with your dipping tubes to examine with the Microscope. Later in the season, when the *Duck weeds* appear on the surface of quiet waters, you must put a lot of them into your jar. These are curious little plants, shaped like flax-seed, but larger, that float upon the surface, with their roots hanging down in the water. The roots of these are the favorite resort of many curious microscopic animals, and will afford you a harvest of curious things. In the mean time put some clean gravel, an inch or so, in the bottom of your jar, and then put into it any delicate water-plants you come across. If they were rooted where you found them, tie a small stone to their roots and place them in the jar. Put in some snails, that you may watch their eggs, as mentioned last month,

FOR THIS MONTH,

besides what special things have been mentioned, you will need to look after the *eggs of insects* of various kinds, some of which are objects of great beauty. Insects, as a general thing, place their eggs, for safety, on the underside of a leaf, though some do not observe this precaution....*Small flowers* will now be abundant, and you will find that even the smallest, is an object of beauty when magnified....*Leaves* will now be plenty, and it will be well to examine all those that are rough or downy, as you will often find that the scales which give the roughness, and the hairs that make them downy, are beautiful objects under the Microscope. Of course I can not suggest every use you will find for the Microscope, and I have only tried to point out the most easily found, curious things, with a view to showing you how much is hidden from ordinary sight, and also to get you in the way of examining every thing that you meet in your daily walks and work. THE DOCTOR.

An Easily Made Eel-Pot.

Some time ago we told of some of the methods of catching eels; now "G. L.," of Machias, Me., sends a description of an Eel-pot, as a trap for eels is called, which any boy can construct, and which will no doubt answer as well as any. A common flour barrel has many half inch holes bored all over it, and a piece about 8 in. square cut from one side for a door; the pieces cut out will make the cover, which may be put on with a leather hinge and a button to hold it fast. In one head (or both



AN EEL-POT MADE FROM A BARREL.

if you choose) put a spout, flush or even with the head on the outside, and projecting into the barrel about 10 inches. Upon the end of this, within the barrel, draw a leg of an old stocking, or a piece of one, to hang down over the end of the spout. Stones enough to sink it, are put into the barrel. Fasten a line to the trap, to the other end of which tie a stick of wood for a buoy, so that you can find it, and having put in the bait and made the cover fast, you are ready to sink it where eels are to be found. The engraving shows the arrangement; *a* is the door, *b* the spout, the dotted lines showing the part within the trap, with the stocking leg (*c*) over the end. This stocking leg is the ingenious part of the whole affair. An eel, attracted by the bait, will make its way into the spout and push through the stocking leg, which, as soon as it has passed through, will drop down and act like a valve to cover the entrance, and when once fairly in the trap, we don't think that the slipperiest of these most slippery fishes could ever find the way out. One correspondent charges us with publishing

"AN INJURIOUS SCANDAL"

about his favorite fish. We said of the bait to put into the pot, "no matter if somewhat old," as we had long ago learned from experienced fishermen. This gentleman (a correspondent of "Aunt Sue," who sends us the letter, (done with a "machine,") says that the eel is very particular about its food, and if one wishes to catch him, he must use only "bait of the freshest and sweetest."

Aunt Sue's Puzzle-Box.

ALPHABETICAL QUERIES.

1. What letter, inverted, names a vegetable?
2. What two letters, right side up, name two other vegetables?
3. What letter names an insect?
4. What letter names a pronoun?
5. What three letters name three verbs?
6. What letter names a bird?
7. What letter names "the window of the soul"?
8. What letter gives an order to an animal?
9. What letter names a river?
10. What letter asks a question?
11. What letter is twice yourself?
12. What letter gives a hint?
13. What colored letter gives a geographical name?
14. What speckled letter can anticipate?
15. What foreign letter names a title?
16. What letter, with a piece of wood over it, names another title?
17. What letter names a measure? JOHNNIE.

CHARADE.

"Breakers ahead"; the sailor cries,
From the tap'ring mast's high head.
"Bout ship," the watchful pilot's shout,
"On my first there's naught to dread."

My second both as first and last,
Enfolds most every land,
Whilst not a single bounding sea
But's limited by its hand.

My third, how welcome in the spring,
Companion of the tender lamb.
I'm one possession of the poor,
Which wealth may not command.

O'er my whole the youthful mother toils,
Her expectant babe t'adorn,
Again with care elaborates,
Her widow's grief to mourn.
Anon the lawyer me demands,
His brief and argument t'arrange,
Then I puzzle clerks and all
With figures curious and strange.
The printer too with fingers deft
Selects me from his case,
And in great form I'm daily spread,
T'enlighten every race.
With joyous youth I haste to school,
Till comes the glad vacation,
When high in air, I take my flight,
Sure sign of exultation. J. A. B.

NUMERICAL ENIGMA.

I am composed of 77 letters:
My 1, 61, 7, 35, 45, is a weapon.
My 8, 21, 40, 72, 55, is a vegetable useful for its shell.
My 10, 3, 52, 41, 69, is an animal whose fur is valuable.
My 12, 24, 8, 36, 64, is a musical instrument.
My 14, 2, 56, 46, 30, is a part of the body.
My 16, 5, 25, 42, 51, is a bird.
My 23, 33, 15, 63, 42, is a domestic animal.
My 66, 53, 37, 16, 2, is ditto.
My 47, 20, 8, 34, 4, is a wild animal.
My 42, 1, 18, 73, 31, is the name of one of the gods.
My 26, 76, 42, 6, 19, is ditto.
My 58, 9, 56, 7, 61, is the name of a goddess.
My 70, 15, 23, 49, 3, was the goddess of the family.
My 77, 41, 66, 67, 59, is a very lazy animal.
My 29, 44, 71, 39, 11, is a small bird with long wings.
My 37, 3, 62, 28, 57, is a black bird.
My 50, 38, 24, 43, 5, is a bird remarkable for its directly ascending flight.
My 32, 4, 75, 22, 13, is a fish.
My 44, 27, 60, 36, 17, is a grain.
My 54, 48, 65, 74, 10, is an aquatic flowering plant.
My whole is a proverb. ISOLA.

CROSS-WORD.

My first is in canter but not in walk,
My next is in scolding but not in talk,
My third is in cavern but not in dell,
My fourth is in Sarah but not in Belle,
My fifth is in minute but not in hour,
My sixth is in oatmeal but not in flour,
My seventh is in ginger but not in mace,
My eighth is in contest but not in race,
My ninth is in spider but not in fly,
My tenth is in rainy but not in dry,
My eleventh is in scour but not in wash,
My twelfth is in pumpkin but not in squash,
My thirteenth is in purple but not in white,
My fourteenth is in darkness but not in night:
My whole is a city of some renown
On the map of Europe 'tis written down. C. E. A.

ALPHABETICAL ARITHMETIC.

L P M) S R O E N P (A S R O
R A T
A M P E
A P O T
A P S N
P T T M
A T R P
A T A R
L E S.

PI.

Klach dale sode ton innotac a glenis cliprate fo deal, tub si codemops fo branoc dan niro.

DROP LETTER PUZZLE.

"—c—e—c—t—u—a—l—c—o—a—c—s—a—c—t—l—y—
u—a—c—o—k—d—n—h—o—h—r—l—e."

JOHN W. WHEATLEY.

TRANSPOSITIONS.

(Fill the blanks in each sentence with the same word transposed.)

1. Do not —— your child to ——.
2. The glory of —— is no ——.
3. The carpenter gave me a —— ——.
4. After crossing the —— they ——.
5. I bought a —— and got it ——. M. P.

SQUARE WORD.

1. The sky. 2. An animal. 3. Astonished. 4. A mark. 5. To weaken. 6. An adder. LITTLE FOLKS.

A SPRING SCENE IN MARYLAND.—*Drawn and Engraved for the American Agriculturist.*

CONCEALED FISH.

(*Two in each sentence, one spelled forward, the other backward.*)

1. He was so bad, a certain person would not have him.
2. It is late so let us go ahead. Ah! see! The play has commenced.
3. Much feeling may be expressed in the piano. "Do I delight in music?" Yes, indeed!
4. In trying to cross Doly bog, one is like a ship without a rudder.
5. He lost ten checks, which put him in a rage. NIP.

ANSWERS TO PUZZLES IN THE FEBRUARY NUMBER

ACROSTIC.—Auld lang syne.

A—msterdam.
U—tica.
L—itchfield.
D—orchester.
L—ansingburg.
A—nnapolis.
N—ewark.
G—ettysburg.
S—alisbury.
Y—onkers.
N—ewton.
E—denton.

DIAMOND PUZZLE.

Architect.

A
I R K
D E C O Y
L E G H O R N
A R C H I T E C T
E C S T A S Y
S T E E R
A C E
T

ANIMALS ENIGMATICALLY EXPRESSED.—1. Ram. 2. Sloth. 3. Pouch. 4. Ounce. 5. Mare (mayor). 6. Bear (bare).

FIGURE BLANKS.—1. Thirty—ten. 2. Five—four—8. 3. One—seven. 4. Forty—two—four—nine. 5. One—eight. 6. Nine—eight. 7. Forty—two—ten—four—two—eight. 8. Six—eight—four—tray.

CROSS-WORD.—Be truthful.

Thanks for letters, puzzles, etc., to Cur, Isola, Albert F. C., X. Y. Z., A. F. Conant, and Jacob Hales.

Additional names of those answering John W. Wheatley's enigma.—Nemo, Ira M. Price, Fanny Bond, and Bessie V. Griffin.

It may be as well to remark that puzzles upon the name of the *Agriculturist*, or upon that of any one of its editors or proprietors, is not likely to be ever published.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

A Spring Day in the Country.

We have before told you about our pictures. Some of them we give because they teach something, whether about our own, or some other country; other pictures are given merely because they amuse; others still, simply because they are *pictures*, and these, without any thought of what they may teach, are given because they are pleasant to look upon, as specimens of the engraver's art. If, in addition to this, they tell any story, all the better. If you were to compare the above picture with that of some costly city building in this country, or with that of some celebrated structure in the old world, or of some renowned ruin, we think that *our* youngsters would prefer this picture. If we were to ask you why? you would say: "It is home-like. I have seen something very much like that somewhere; I am sure that I have seen just such trees, standing by the side of a run or stream. There are boys engaged in fishing, too. I have fished in just such a stream, where there were trees like these, but"——We know why you say "but," for there is the old building, part house and part mill, with its "flume" to carry the water to the wheel. Then the style of the building is quite unlike anything that has been built within the last hundred years, so you reluctantly give it up, and admit that it is a place you never saw. "But is there any such place?" some will ask. Yes, it is a scene in Maryland, which you know is one of the oldest States, and probably the building, for there are many such, was put up long before the war of Independence. We chose it because it was so good a specimen of wood-engraving, and withal so pleasing a picture. The trees look like trees, and the water like water, while the building and all its surroundings, tell as plainly as need be, of days long gone by. So we give the picture because it is a good and pleasing one. But as you look at it, does it suggest nothing to you? The stream runs quietly, the trees are in leaf, the boys enjoy themselves at fishing, and a general air of quiet over the whole, suggests a pleasing "Spring Day in the Country." Ah, these spring days! now present to some of you, and soon to come to others, are there any other days like them? When are the leaves so fresh in their greenery, when do we find such wild flowers, when do the birds sing so joyously, when does the stream ripple so laughingly as in those spring days, when the very air is filled with light and life and loveliness? Many a rich old man, were he to study this picture, would forget that he had, these many years, trodden the hard pavement, while the only glimpse of nature he could get, was by looking up between the walls of brick and stone, to the strip of blue sky, the same sky of which as a boy, he saw the whole canopy. You boys, who look upon this picture of a "Spring Day in the Country," try to see your present blessings, the pure air, the open country, the grand old trees, the swift-running stream, the singing birds, the humming insects, while above all is the glorious sky, and all filled with the abundant sunlight. These are all grand and good, but these overhang and surround a place called *home*. There are a mother, a father, and brothers and sisters, whose love makes it always a "Spring Day in the Country." Are you—as many boys are—discontented? Do you wish to seek another life in the city, or elsewhere, away from home? Take one of these lovely spring days now here, or at hand, and go off by yourself, and think over the matter. Put all that you now have and can enjoy, on the one side, and all that you hope to have, after years of toil—in which you have lost all delight in country pleasures on the other—and then ask yourself "Is it worth while?" Mind, we do not say that no boys should leave the farm for a city life, but we do say that many make the change without proper thought. In these days the "spring-fever" is on; that feeling of discontent, when neither body or mind are at ease. Every boy 15 years old has probably had the "spring-fever," and at those times is very unhappy. When this comes, get your fishing rod and lines, and go to some quiet stream and fish and think. We do not expect you will catch any fish, but something better. Look around at the fresh forest, look down at the starting grass, look up at the sky overhead, and see if this world, especially your part of it, is so bad as it seems. If you don't take home any fish, you will have had a plenty of fishing, which should bring a more contented spirit, and your Spring Day in the Country will not have been wasted.

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This is a combination of capitalists to supply *consumers only* throughout the *United States* with **PURE TEAS** at prices never before known, on the mutual principle, by getting up clubs. Send for New Price-List.

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If the passage of the SILVER BILL shall prove to be as great a BLESSING as the introduction of SILVER-TIPPED SHOES for CHILDREN, by which MILLIONS are saved annually——ask your shoeman for them.

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A KEY THAT WILL WIND ANY WATCH

AND NOT WEAR OUT.

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Mention Agriculturist when you write.

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ONCE PLANTED, WILL BLOOM FOR YEARS.
No trouble with seed-sowing—with hot-beds, or greenhouses. The plants will soon form clumps large enough to divide. They are
EVERYBODY'S FLOWERS.
We have by far the largest collection of these plants in the country, including everything from the old-fashioned Bee Balm and Moss Pink, to the latest introductions from all parts of the world. Our Catalogue for 1878, containing the latest additions, and giving much useful information about these popular plants, sent by mail.
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All the latest novelties and choicest varieties of **VEGETABLE, FARM,** and **FLOWER** Seeds. **EGYPTIAN** or **PEARL MILLET,** 25 cents per packet; 5 packets for $1.00. **CHUFA** or **EARTH ALMOND,** 60 cents per quart. **PRICKLY COMFREY** roots, $2.00 per lb. **COMPTON'S EARLY FIELD CORN,** 60 cents per quart. All by mail prepaid. My circular of Novelties for the Farm, and illustrated descriptive catalogue mailed free to all applicants.
WM. H. CARSON,
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H. W. JOHNS'
ASBESTOS
Liquid Paints.

These Paints are in every respect *strictly first class*, and second to no others in the market in purity, richness, and permanency of color, beauty of finish, and durability. They are prepared ready for the brush, in sixteen newest shades, and standard colors, suitable for the tasteful decoration of all classes of buildings, inside and out, and for all purposes where a perfect protective coating is required.

They contain no water, alkali, or other useless or deleterious ingredients, such as are used in nearly all the ready mixed or so-called chemical paints, and are *guaranteed* to be *the most durable paints in the world for exposed wood and iron work.*

Owing to the wonderful *covering* properties of these Paints, the farmer, merchant, and manufacturer can, by their use, preserve and beautify their buildings, fences, or other wood and iron work, at from *one-half to two-thirds of the usual cost of other ready mixed paints,* or white lead and linseed oil. ☞ These Paints are sold by standard U. S. gallon measure, and our packages contain from EIGHT TO TWELVE PER CENT MORE PAINT than those usually sold.

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Send for Circular.

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TRY THE ORANGE COUNTY SEEDS.—See Advertisement on Page 151.

MRS. OLD FOGY DOES NOT USE THE ROBBINS WASHER. | MRS. COMMON SENSE DOES. TAKE YOUR CHOICE.

TO MAKE MONEY
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CELEBRATED
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This machine has been ON TRIAL for the past six months in every State and Territory in the Union, and the almost unanimous verdict of housekeepers is this: **"Your Washer has proved a complete success."** Some of the reasons why this popular verdict has been reached may be found in these facts:

The Robbins Washer is an entirely NEW MACHINE. It is constructed upon a NEW PRINCIPLE—that of forcing water by downward pressure through the fabric. The dirt or discoloration is removed by water force—there is no rubbing or friction about it. This principle is the only one that has ever been successfully applied to the cleaning of fabrics by machinery. All others have failed in one or more essential points. The Robbins Washer will cleanse perfectly, without rubbing, all kinds of wearing apparel, table or bed linen. It will not injure the most delicate fabric. It is the greatest bleacher extant, and for this purpose alone is worth ten times the price of the machine. It is simple, self-operating, never gets out of order, and will last a lifetime. It saves time; it saves labor; it saves material.

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Therefore, we confidently say to every housekeeper in the land, You want a ROBBINS WASHER. You cannot afford to be without one. It will pay to buy one.

THE RETAIL PRICE IS ONLY **$3.50.**

Sample to those desiring agencies, $3.

In bringing the Robbins Washer before the public it becomes necessary to take into brief consideration the

ART OF CLEANSING FABRICS,

which, although so common, is yet imperfectly understood. Having had a lifelong experience in the laundry business—in connection with first-class hotels, public laundries, asylums, hospitals, &c.—we know whereof we speak. The numerous devices of friction rollers, pounders, squeezers, washers, agitators, steam wash boilers, &c., have all done very well, so far as it was possible for such principles and devices to do. But they have all failed in one or more of the three essential points, viz.: The saving of labor, the wear and tear of clothes, or in perfectly extracting the dirt or discoloration—all of which are accomplished by the ROBBINS LITTLE WASHER.

WHAT IS IT THAT REMOVES THE DIRT?

You may ask all washerwomen and housekeepers, and your answer from nine out of ten will be: "Plenty of elbow grease;" or, in other words, plenty of hard, laborious rubbing on the washboard. And such is the case, for you first have to rub soap upon the cloth, then you have to rub it in to make the dirt soluble. But does that remove it? No; to do that you must first dip it in the water, and then rub it in again to force water through the fabric. That is what removes dirt after being softened by the chemical action of the soap upon it.

The way in which this could be the most economically accomplished is what we have so long and patiently sought after, and at last a principle has been demonstrated that in uniting all the above named, in

THE PRINCIPLE OF THE LITTLE WASHER

is embodied all the essential points. First, we have the desired heat, which expands the fabric and causes it to discharge the dirt. Second, we obtain a powerful suction beneath the clothes, which causes a rapid downward current of water force through and through them, thereby removing the dirt. Third, we use a large body of water, which holds the dirt in solution. Thus we cleanse thoroughly, rinsing the clothes as usual being all that is required to complete the operation.

The Washer is composed of solid galvanized iron, which will not rust or corrode. There are two sizes—the No. 1, or family size, for ordinary household use; and No. 2, or hotel size, suitable for country hotels, boarding-houses, laundries, &c.

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We want agents everywhere throughout the United States, in every State, county, town, and hamlet. The retail price of No. 1 Washer is $3.50; of No. 2 Washer, $5. But we sell sample machines of No. 1 size at $3; No. 2, or small hotel size, at $4. Canvassers for this Washer can make more money with it than with anything ever before offered to the public. As, for instance, we established two agencies to test the sale of the Washer upon its merits—one in Naugatuck, Conn., and one in Providence, R. I. The former, Mr. Charles Daniels, in a town of about 2,000 inhabitants, sold by canvassing in two weeks eighty-two Washers. In the latter place, Mr. James Roberts, now of Naugatuck, Conn., sold in less than three months, without canvassing or advertising outside the store, over 500 Washers. A thing never before heard of.

TO PERSONS OUT OF EMPLOYMENT

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Remit by money order or registered letter to
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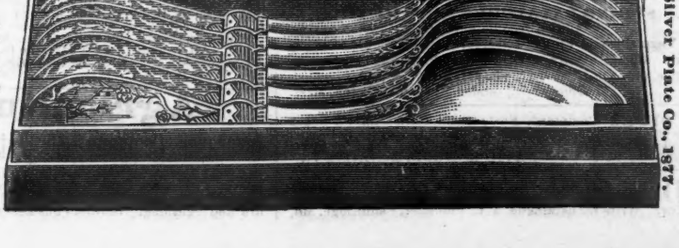
ONE SET OF 6 QUADRUPLE TEA SPOONS IN CASE,
Finely and heavily plated with PURE NICKEL and COIN SILVER, on a new metal, called **Alfenide,** which is very similar to the finest English white steel. It contains **no *brass* or *German silver*** in its composition, and consequently *no poison,* or disagreeable taste. Are very strong and will wear for years. Two sets, $1.50.

We shall not furnish these goods to the trade, consequently they cannot be supplied by any other manufacturer or dealer. We also make of same quality, Table Spoons 6 for $1.75; Forks, 6 for $1.75; Table Knives, balanced, solid steel handle and blade, triple plate, 6 for $2. **New England Silver Plate Co.,** ManTrs. **New Haven. Ct.**



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New Varieties Potatoes.

BLISS' TRIUMPH.—A new and early variety. Ten days earlier than the Early Rose; one of the most promising varieties we have ever offered.

TROPHY.—This fine, second early variety resembles the Snowflake in shape and quality. It has a beautiful red skin, and may be justly called a "Red Skin Snowflake."

Price of each variety, $1.00 per lb., 3 lbs., $2.50, *by mail post paid.*

MANHATTAN.—A new round late variety, with purple skin occasionally blotched with white, very hardy, of vigorous growth, flesh very solid, white, and of fine quality. It is enormously productive, an excellent keeper, and a most desirable variety for the main crop.
Price, 75 cts. per lb.; 3 lbs., $2.00; by mail, post-paid.

HARLEQUIN, or VARIEGATED-LEAVED EARLY ROSE.—A sport of the Early Rose, with beautifully variegated foliage.
Price, $1.00 per lb. Single tubers, 25 cts.

ALPHA.—The earliest variety known, and of extra fine quality—matures its crop in 55 days.

BLISS' IMPROVED PEACHBLOW.—A cross between the well-known Jersey Peach Blow and the Excelsior, resembling the Peach Blow in appearance. In quality and earliness it far excels that variety, and will produce double the quantity.
ALPHA AND IMPROVED PEACHBLOW will be mailed, post-paid, per lb., 60 cts.; 3 lbs. to one address, $1.25. Peck, $1.00; bush., $3.00; bbl., $7.00.

SNOWFLAKE, RUBY, SUPERIOR, CENTENNIAL, and all other popular varieties, at the lowest market prices. 60 cts. per lb.; 3 lbs., $1.25. For prices by bbl., see Potato Catalogue.

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500 Named Varieties Potatoes.

The largest collection in the world, for which was awarded the Grand Centennial PRIZE MEDAL and DIPLOMA.

One Tuber each of the entire collection, correctly labeled, and carefully packed, express or postage prepaid:
500 varieties, $100; 250 varieties, $50; 100 varieties, $25; 50 varieties, $15; 25 varieties, $8.

Bliss's Illustrated Potato Catalogue contains a list of 500 varieties, beautifully illustrated; also much useful information upon the cultivation of this valuable esculent. **10 Cents.**

Two New Varieties of Sweet Corn.

DOLLY DUTTON.—The earliest Sweet Corn ever introduced. A very dwarf growing sort, stalks from three to four feet high. Ears small, averaging from four to five inches in length, kernels of good size, tender, very sweet and delicious. It ripens from seven to ten days earlier than the early Minnesota, and is of much better quality.
Package containing sufficient for fifty hills, 25 cents; five packages for $1.00; selected ears 15 cents each; two for 25 cents; $1.25 per dozen.

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Packets containing sufficient seed for 100 hills, 25 cents; 50 cents per pint; 75 cents per quart.

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GENUINE No. 1 PERUVIAN GUANO, $56.
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Double Refined Poudrette, $22.50.
Ammoniated Animal Matter (Bone, Meat, and Blood), unequaled for the price, $22.50.
Ground Bone, $27 & $30.
Best Land Plaster, $8 per ton, in barrels.
Send for TWENTY-THIRD annual pamphlet. Order direct of
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Dealer in Agricultural Implements and Fertilizers.
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This is the only fertilizer professedly containing **all** the soil elements found in each crop. Prof. W. O. Atwater, of the Connecticut Agricultural Station, analyzed six of our different fertilizers, and found in every case, as we guaranteed, **that they contained a larger percentage of plant-food elements** than we claimed by the labels placed on each package. Send for circular. Address
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CHEAPEST FERTILIZER
BECAUSE THE BEST.
PREMIUM BONE
Grows **WHEAT and GRASS, equal to manure,** at **Half the Cost,** and lasts twice as long.
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12 BOUQUET DAHLIAS, VERY SUPERB; every one a gem; by mail, $2. Amaryllis Johnsonii, beautiful crimson, striped white, very fragrant, $1 each; Vallotta Purpurea, 50 cts. each; the whole, post paid, $3.
DEXTER SNOW, Chicopee, Mass.

HULL & SCOTNEY,
346 North Water St., Philadelphia, Pa.,
GENERAL COMMISSION MERCHANTS,
and Wholesale Dealers in Butter, Cheese, Eggs, Poultry, Lard, Tallow, Game, Potatoes, Apples, Hay, Grain, Flour, Fur, Wool, Cotton, Peanuts, Broom Corn, Foreign and Domestic Fruits. **Liberal Cash Advances** made on all Shipments but perishable goods. Send for Price List, Stencil, &c., &c. **Reference Cash,** or we refer to any Responsible House in our city.

Fresh and Genuine WETHERSFIELD ONION SEED.

(With a "Pedigree" as far back as the Revolution.)

THE BEST LARGE RED	per lb.,	.75c.
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THE BEST EXTRA EARLY RED	" "	$1.00
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DANVERS HALF LONG ORANGE CARROT	" "	1.25
THE BEST LONG ORANGE CARROT	" "	1.00
Dolly Dutton Sugar Corn, Earliest known	Per Qt.,	70c.
Comstock's Premium Late Flat Dutch Cabbage,	per lb.,	$2.00
Egyptian Turnip Beet. True Stock	" "	1.00
Bastian's Early Turnips. " "	" "	.75

The above by mail, post-paid, at prices named, in quantities of not less than ¼th lb. upwards.
East Hartford Extra Early Peas, Peck $1.75; ½ Bu. $3; Bu. $6.
Extra Selected Champion of England Peas, Peck $1.50; ½ Bu. $2.50; Bu. $5.00.
Ey. Minnesota Sweet Corn (true), Peck $1.25; ½ Bu. $2; Bu. $4.
Stebbins' Improved Early Canada Corn (true), Peck 90c.; ½ Bu. $1.75; Bu. $3.50.
Gilead Prolific, seed saved from stock having not less than three ears each, by mail per Qt., 50c.; Exp., Peck $2.00.
Catalogue free. Prices low. Seeds the Best. Terms Cash.

R. D. HAWLEY,
HARTFORD, CONN.

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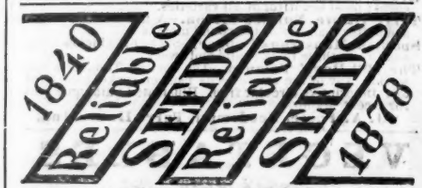
and all Gardeners will find my new work on **"Vegetable Plants"** indispensable, as it gives explicit directions for growing all kinds of plants in open ground and under glass, also more valuable information on *noxious insects* than was ever before published. Dr. F. M. Hexamer, of New Castle, N. Y., says: "Many a single page contains more valuable hints than could be obtained for ten times the cost of the whole book." On receipt of $2.50 I will mail one copy of this book and one pound of the finest and best Premium Flat Dutch Cabbage Seed *you ever saw!* In support of this assertion I will send testimonials from many eminent Horticulturists, and a *sample of the seed free to any address.*

ISAAC F. TILLINGHAST,
Late TILLINGHAST BROS.,
Factoryville, Wyoming Co., Pa.



CROSMAN BRO'S **CATALOGUE & GUIDE,** to the FLOWER and VEGETABLE GARDEN, for 1878. Elegantly illustrated. Sent **FREE.** Address
[*Established* 1840.] CROSMAN BRO'S, Rochester, N. Y.

My **Annual Catalogue of Vegetable and Flower Seed for 1878** will be ready by January, and sent **free** to all who apply; Customers of last season need not write for it. I offer one of the largest collections of vegetable seed ever sent out by any seed-house in America, a large portion of which were grown on my six seed farms. **Printed Directions for cultivation on every parcel.** All seed sold from my establishment warranted to be both fresh and true to name; so far that should it prove otherwise, I will refill the order gratis. As the original introducer of the Hubbard and Marblehead Squashes, the Marblehead Cabbages, and a score of other new vegetables, **I invite the patronage of all who are anxious to have their seed fresh, true, and of the very best strain. NEW VEGETABLES A SPECIALTY.**
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PRICKLY COMFREY.—The latest, best, and most productive forage plant introduced. Milk farmers try it and you will like it. Circulars and cuttings, now ready, by mail, postage paid, one dozen setts 75 cts.; per hundred $4. Roots uncut, $2 per lb.; growing plants in boxes by express, $1 per doz. GEORGE H. RICE, Box 122, Worcester, Mass.

NEW FRUITS.

We offer for the spring of 1878—**APPLES:** *Haas, Pewaukee, Walbridge, Tetofsky;* **PEACHES:** *Amsden, Ex. Beatrice, Foster, Steadley, Sleeper's Dwarf;* **PLUMS:** *Wild Goose, Newmans, De Caradeuc;* **CHERRIES:** *Large Montmorency, Louis Philippe.* Also our usual large stock of Apples, Crabs, Peaches, Plums, Cherries, Currants, Gooseberries, Raspberries, &c., &c. Correspondence solicited.
HEIKES NURSERIES CO., Dayton, Ohio.

SEEDS—PLANTS.—Fresh Onion Seed, Red and Yellow, 75c. lb. by mail. Cold Frame Early Jersey Wakefield Cabbage, $6.00 per M. Send for price list.
WM. W. STERLING, Cutchogue, Suf. Co., N. Y.

Small Fruit Plants, etc., cheap now. Club together and get $10 worth at 1,000 rates. See JOHN S. COLLINS' offer, page 112, last number.

A GREENHOUSE AT YOUR DOOR.

For $1.00 we will send *free by mail* either of the following named collections, *all distinct varieties:*

8 Abutilons, or 4 Azaleas,
8 Begonias, or 3 Camellias,
2 Caladiums (fancy), or 8 Carnations (monthly),
12 Chrysanthemums, or 12 Coleus,
8 Centaureas or 8 other white-leaved plants,
8 Dahlias, or 8 Dianthus (new Japan),
8 Ferns, 8 Mosses, or 8 Fuchsias,
8 Geraniums Zonale, 8 Double, or 8 Scented,
8 Geraniums Fancy, 8 Variegated, or 8 Ivy-leaved
4 Gloxinias, 8 Gladiolus, or 8 Tuberoses (Pearl),
4 Grape Vines, 4 Honeysuckles, 4 Hardy Shrubs
8 Heliotropes, 8 Lantanas, or 8 Petunias,
8 Pansies (new German), or 8 Salvias,
8 Roses, Monthly, 8 Hardy Hybrid, or 4 Climbing,
8 Violets (scented), or 8 Daisies, English,
12 Scarcer Bedding, or 12 Scarcer Greenhouse Plants,
16 Verbenas, distinct and splendid sorts,
25 varieties of Flower, or 20 varieties of Vegetable Seeds,

or by EXPRESS, *buyer to pay charges:*

3 collections for $2; 5 for $3; 9 for $5; 12 for $6; 14 for $7; 18 for $10; or the full collection of 350 varieties of Plants and Seeds—sufficient to stock a greenhouse and garden—for $25, to which our book "Gardening for Pleasure" and Catalogue (value $1.75) will be added.

PETER HENDERSON & CO.
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I will send my new priced catalogue **free to all applicants.** It contains a list of prices of over **ONE THOUSAND PLANTS,** and at such rates as to bring them within the reach of all.

Abutilons	10c.	Calla Lilies	12c.
Ageratums	08c.	Cyclamens	10c.
Begonias	15c.	Chrysanthemums	10c.
Carnations	10c.	Fuchsias	10c.
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Heliotropes	10c.		
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Primroses	15c.		
Roses	20c.		
Smilax	06c.		

Send for combined Seed and Plant Catalogue.

PLANTS and SEEDS forwarded by MAIL FREE, and packed so as to ensure safety.

WM. E. BOWDITCH,
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ROSES and BEDDING PLANTS
mailed free to all applicants.
W. C. WILSON & CO.'S
ILLUSTRATED CATALOGUE OF
SEEDS AND BULBS
mailed free to all applicants.
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Following Choice Collections free by mail upon receipt of price:

25	pkts. Flower Seeds, extra	$1.00
12	Tuberoses, Double, extra	1.00
12	" Pearl	1.00
12	Gladiolus, extra	.50
6	Dahlias, 6 sorts	1.00

BEAUTIFUL, EVER-BLOOMING
CARNATION PINKS!
Assorted. Best varieties. In colors of *White, Carmine, Rose, Variegated,* and *Yellow.* All labeled. *Strong, healthy, well-rooted* plants. Sent *safely* by mail to any Post-Office. **6 for 50c.; 14 for $1.**

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To all who send **10c.** and postage stamp I will send a *Flowering Bulbs* and **CATALOGUE OF FLOWER-PLANTS,** etc., containing beautiful **Chromo Card** and **instructions for flowering Tuberoses** and **growing Carnations.** Catalogue alone, **5c.** Address
CHARL S T. STARR, Avondale, Chester County, Pa.

50,000 Double Tuberose Bulbs.

	Doz.	100	1,000
First Quality Large Flowering Bulbs	$ .75	$4.00	$25.00
Second Quality Flowering Bulbs	.50	3.00	15.00
A few hundred EXTRA Large Bulbs	1.00	5.00	
Dwarf Pearl, 1st quality Flowering Bulbs		6.00	

If sent by Mail, 25 cents per dozen, EXTRA.

The past season having been the most favorable for the growth of bulbs, we offer the largest and best ever sent out by us.

MILLER & HAYES,
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SEEDS, BULBS, &c. By mail, post-paid, 10 Double Tuberoses, fine flowering bulbs, 75c. 12 choice Gladiolus, 12 sorts with name, $1.00. 4 Lilies, 4 beautiful sorts, 50c 5 choice Roses, 50c. All kinds of Flower and Vegetable seeds of the *very best* quality, at **Five Cents per paper.** Bulbs and Plants in variety. Catalogues free—send for one at once. JOHN LEWIS CHILDS, Queens, N.Y.

BY MAIL FREE.

$1 To any address on receipt of **$1.00:**
5 CHOICE TEA ROSES,
4 ASSORTED VERBENAS,
2 HELIOTROPES,
2 GERANIUMS.
2 FUCHSIAS.
2 COLEUS.

CROMWELL & CONDON,
Baltimore, Md.
Office Patapsco Nurseries.

FLOWER SEEDS.—800 best varieties at wholesale prices. 5ct. pkts. for 2½ cts. 10 ct. pkts. for 5 cts., &c. Send for catalogue. D. C. McGRAW, Riverside Gardens, Binghamton, N. Y.

New Coleus
"MULTICOLOR"

A new and distinct species, introduced from the Solomon Islands. In color it is remarkable for the number of rich shades of crimson, red, rose, &c., into which the leaves sport. It is a very beautiful plant, and will be found among the most useful of its tribe for decoration.

PRICE—40 cts. each by mail prepaid. Price to the trade on application.

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By mail, post paid, (on own roots) 25 cents apiece, $2.00 per dozen, $12.00 per hundred. Large plants (budded or on own roots) by express at purchaser's expense 50 cents apiece, $4.00 per dozen. **The most select collection in America.** Send for Catalogue, with colored plate, 10c; plain, free.

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BEAUTIFUL EVER-BLOOMING
ROSES

We deliver STRONG POT ROSES, suitable for **immediate flowering, safely by mail, at all post offices, 5 splendid varieties, your choice,** all labelled, for **$1; 12** for **$2; 19** for **$3; 26** for **$4; 35** for **$5; 75** for **$10; 100** for **$13.** Send for our **New Guide to Rose Culture,** and choose from over 300 finest sorts. Our **Great Specialty** is **growing** and **distributing** Roses. **THE DINGEE & CONARD CO.,**
Rose Growers. West Grove, Chester Co., Pa.

NEW and RARE ROSES.

We offer from our list of over 500 Varieties of Roses. Well grown, one year plants, pot-grown on own roots, our selection. Hybrid Perpetual and Noisette, $3 per doz.; $20 per 100. Teas and Chinas, $2.50 per doz.; $16 per 100. Young plants per mail, $1.00 per doz.; $7 per 100. Also the rarest and choicest Evergreen and Ornamental Trees and Shrubs of all varieties for planting in Lawn, Yards, etc.

MILLER & HAYES, Mount Airy, Philadelphia, Pa.

ROSES 6 for $1, 14 for $2, postpaid. *Bedding & Greenhouse Plants* by mail. *Catalogue free.* J. T. Phillips & Son, West Grove, Chester Co., Pa.

ROSES $1.00 per Dozen. | **TUBE ROSES** EXTRA 50c. per Dozen.

BEDDING PLANTS, 75c. per Dozen.
All first class, guaranteed. Send for Catalogue FREE.
Address, **B. P. Critchell, Cincinnati, O.**

A DOLLAR FLOWER GARDEN.

10 pkts. Choice Annual Flowers, worth		50 cents.
2 Choice Gladiolus Bulbs,	"	40 "
1 Japan Lily Bulb,	"	80 "
2 Double Tuberose Bulbs	"	80 "

Sent, Post-paid, for $1.00.
Catalogue free. **W. B. DIMON, Jr., Milan, O.**

10 ROSES MAILED FREE FOR $1
Splendid assortment of Plants sent safely by express or mail, any distance. Satisfaction guaranteed. Send 3 cent stamp for catalogue. Address,
R. C. HANFORD & SON,
Columbus Nursery, Columbus, Ohio.

14 GERANIUMS,
fine sorts, for One Dollar by mail. All kinds Plants and Roses cheap. Lists free.
Tyra Montgomery, Mattoon, Ill.

SPLENDID FLOWERS

Strong Plants, your choice, delivered by mail free of cost at your door. **Our New Hand-Book of 24 years' experience sent free, with directions for culture of over 1200 best varieties.** *Centennial medal. Largest assortment. Low prices. All labeled. Satisfaction assured.* **6 Roses, all named, $1; 13 for $2.** HOOPES, BROTHER & THOMAS, Oberry Hill Nurseries, West Chester, Pa.

WHITE POND LILIES.

Strong roots dug fresh from the ponds, well packed and mailed for 25 cts. each, $2.00 per doz. They bloom finely in tubs and artificial ponds.

CAPE COD CRANBERRY PLANTS, 25 cts. per 100, $2.25 per 1,000, pre-paid by mail; 10,000 by express, $15.00. Circulars with directions for planting both, free.

J. A. VAUGHAN & CO.,
Carver, Plymouth Co., Mass.

WHITE WATER LILY.—Strong roots of this fragrant Lily, with printed directions for planting in tubs and ponds, 25 cts. each, $2 per doz., by mail.
MANN BROS., Randolph, Mass. P. O. Box 130.

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Address all orders to
ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.

containing a great variety of items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 129.

Oyster Shell Lime.—"B." Oyster shell lime is a very pure kind of lime containing a small per cent of phosphoric acid and no magnesia; it is therefore worth a little more than stone lime. The price depends upon the facility for gathering the shells and the cost of fuel. It will pay for use at 10 to 15 cents a bushel.

A Tonic for Pigs.—"C. A. F.," Reno Co., Kansas. A good tonic for hogs is made as follows: Take 5 pounds of linseed meal, one pound of charcoal, 4 ounces of gentian root powdered, 4 ounces of sulphate of copper, one pound each of flowers of sulphur and of salt. Mix, and give a tablespoonful in the feed occasionally.

Cow Leaking Milk.—"W. H. D.," New Preston, Conn. There is no cure for a cow that leaks milk. This fault arises from a laxity of the muscular stricture which closes the duct of the teat, and is therefore beyond remedy. To bother with devices to prevent it would cost more than the loss arising from selling the cow for beef, and procuring another.

Planting Beans.—"B. W. Y.," New Castle, Pa. A light soil is best adapted for beans, but any soil that is well prepared, dry, and mellow, will produce a fair crop. The usual method of planting is in rows 24 to 27 inches apart, and the beans 6 inches apart in the rows, or in hills 18 inches apart. From two pecks to a bushel of seed is needed for an acre.

Meeting of Stock Graziers in Colorado.—The 8th annual meeting of the Colorado Stock Growers' Association, was held at Denver, Jan. 8th. The importance of this interest was clearly set forth in the course of the proceedings. The members of the Association represent 600,000 head of cattle, a capital of $10,000,000, and employ more than 2,000 men. The shipments eastward the past season have been 100,000 head, worth $3,000,000. These cattle now fully occupy the grazing lands of the whole State, and the importance of securing a steady and staple foundation for this interest, is unquestionable. At present the stockmen hold their grazing grounds by possession only, the peculiar condition of the tenure of the lands and the laws regarding their sale, practically prohibiting ownership or legal right to occupation. We have frequently pointed out this anomalous and injurious condition of things, and hope that very soon some change in the law will be made, by which the absurd restriction of 160 acres to each purchaser, of lands that are totally useless for agriculture, may be abrogated; and some method may be found of leasing large tracts or selling them at reasonable prices for pastures only.

The Value of Mixed Food.—"G. C. C." When straw, or other fodder of inferior value, is fed along with some rich concentrated food, as corn, oil cake, bran, etc., in proper proportions, the mixture can be made of equally nutritious value with good, medium, or the best hay, so that by adding to the straw the needed equivalent, we can make a good substitute for the hay. The proper proportions can be gathered from Professor Atwater's articles on feeding stock in former numbers.

Catalogues Received.

When we gave such ample space last month, we supposed that we had finished up our catalogue list for the season. Since then, a large number have come to hand which have equal claims upon us with the others, and we give them here. When there are several departments

embraced in one catalogue, we, as before, place it under the head of what appears to be the leading business.

NURSERYMEN.

The number of nursery establishments that add a floral department to their nursery business is annually increasing, but we can not record these under distinct heads, unless separate catalogues are issued.

J. W. ADAMS, Springfield, Mass.—A general fruit and ornamental stock, with Worden grape as a specialty.

EDWIN ALLEN, New Brunswick, N. J., an abridged, well-selected list of fruit and ornamental trees, by an excellent pomologist.

ROBERT BUIST, Philadelphia, Pa., though most generally known as a florist, has an ample fruit and ornamental tree and plant catalogue.

BUSH, SON & MEISSNER, Bushberg, Jefferson Co., Mo.—Their price list of grape vines is as full, compact, and instructive as usual.

HARVEY CURTIS, Owego, N. Y.—General nursery stock.

A. HANCE & SON, Red Bank, N. J., send both retail and trade lists of a large and most varied stock, including a number of specialties and novelties.

HEIKES NURSERIES CO., Dayton, Ohio.—Semi-annual trade list of general stock.

HOOPES, BROTHER & THOMAS, Westchester, Pa.—Trade list, offering favorable terms to wholesale buyers.

T. S. HUBBARD, Fredonia, N. Y.—A wholesale list of grapes, etc., with wood for propagating.

THOS. JACKSON, Portland, Me.—Wholesale catalogue of general stock. Very full in Evergreens.

J. JENKINS, Winona, Ohio, makes $1.00 collections of fruits and ornamental plants a specialty.

W. W. JOHNSON, Central Lake, Austin Co., Mich.—Forest-tree seedlings, with notes on planting; also forest-tree seeds.

SAMUEL KINSEY, Dayton, Ohio.—Small fruits in large variety; also ornamental plants.

LAPHAM & ANTHONY, Clayton, Del., call theirs the Dollar Nursery, as they send plants in $1 collections.

WILLIAM H. MOON, Morrisville, Pa.—General fruit-list; very full in ornamental plants.

PARSONS & SONS CO., Flushing (L. I.), N. Y.—A special list of "New and rare plants." A remarkably choice collection, few of which are to be found elsewhere.

WM. A. STRONG & CO., Brighton, Mass.—A general catalogue with a list of new and desirable varieties.

F. TROWBRIDGE, Milford, Conn.—A cranberry catalogue, with directions for growing.

T. C. THURLOW, Newburyport, Mass.—General list, and a special one of evergreens.

E. R. UNDERHILL, Poughkeepsie, N. Y.—Small fruits, with novelties, especially in strawberries.

HENRY WILBUR, Montgomery, Mich., sends three lists; fruits in general, peaches, and ornamental shrubs, etc.; each with a full cultural treatise.

SEEDSMEN.

BEACH, SON & CO., No. 7 Barclay St., N. Y., in the "American Garden," continued as a quarterly, offer their stock, and give much useful and timely instruction.

PAUL BUTZ & SON, New Castle, Pa.—List of tested garden, field, and flower seeds.

W. H. BURLEIGH, Plainfield, Conn.—A general list of seeds and plants, and a special list for market gardeners.

J. H. & W. E. CONE, Hartford, Conn., offer genuine Wethersfield garden-seeds, implements, etc.

CURTIS, COBB & WASHBURN, Boston, Mass.—The former firms of Curtis & Cobb and Washburn & Co. have united their forces, and the result is an immense catalogue, full in every department.

HENRY A. DREER, No. 714 Chestnut St., Philadelphia, Pa., presents in one compact catalogue a full stock of seeds of all kinds, implements, and florists' supplies, also a large list of greenhouse and other plants.

HAWKINS & CORNISH, Goshen, Orange Co., N. Y.—General seed stock; potatoes a specialty, with kinds not offered elsewhere.

HOVEY & CO., No. 16 South Market St., Boston, Mass.—A full catalogue, with a long list of novelties, as usual.

E. B. JENNINGS, Southport, Conn.—Choice potatoes and seeds of his own growing.

A. W. LIVINGSTON'S SONS, Reynoldsburg, Ohio.—General seed list, with specialties of their own.

THOMAS MEEHAN, Germantown, Pa.—Special list of fruit seeds, kept in condition for spring planting.

A. C. NELLIS, Canajoharie, N. Y.—Seeds, vegetable plants, greenhouse plants, and bulbs,

GEO. W. PARK, Mt. Vernon, Ohio, offers a general stock of seeds, bulbs, etc.

FRANK S. PLATT, New Haven, Conn.—In liberal size, large type, fine paper, and excellence of illustration, this catalogue is something remarkable; and its matter seems to be as good as its manner.

W. H. SPOONER, Boston, Mass., preserves the same neatness and compactness which have heretofore made his very full catalogue noticeable.

ROBERT VEITCH & SON, New Haven, Conn.—A general wholesale seed list.

JAMES VICK, Rochester, N. Y.—Besides the ample general catalogue noted last month, sends a special wholesale list.

FLORISTS AND DEALERS IN PLANTS AND BULBS.

C. E. ALLEN, Brattleboro, Vt., in addition to greenhouse and bedding plants, offers seeds and small fruits.

BELLEVUE NURSERY CO., Paterson, N. J., with their usual full stock, offer several novelties. Also seeds.

P. J. BERCKMANS, Augusta, Ga., besides carrying on an immense nursery, has an extensive florist's establishment, and offers, besides others, many plants suited especially to the Southern States.

ROBERT BUIST, Sr., 67th St. and Darby Road, Philadelphia, Pa.—That this establishment, now nearly half a century old, still keeps up its freshness, is shown by this full catalogue.

PAUL BUTZ & SON, New Castle, Pa., with general stock, offer many novelties.

THOMAS ELVERSON, New Brighton, Pa., besides a large plant list, has a full seed catalogue.

ELLWANGER & BARRY, Rochester, N. Y., issue a special rose catalogue, which is not a mere price list, but is a readable treatise.

WM. A. HACKETT, Dubuque, Iowa, has a full stock, with most of the novelties of the year.

HOOPES, BROTHER & THOMAS, Westchester, Pa., have a special catalogue of greenhouse and bedding plants, and offer many quite new.

M. MICHEL, Bryan, Brazos Co., Texas.—A full stock, with abundant cultural directions adapted to the peculiar climate of Texas.

MAHLON MOON & SON, Morrisville, Pa., send a special catalogue of Gladiolus, of which they have one of the largest and choicest collections in the country.

JOSEPH T. PHILLIPS & SON, West Grove, Chester Co., Pa.—A full illustrated list, with directions for cultivation.

JOHN SAUL, Washington, D. C.—We always look to this catalogue for choice novelties, and the present issue does not disappoint. It has a colored plate of the magnificent pelargonium "Mrs. John Saul."

DEXTER SNOW, Springfield, Mass., in issuing a general list, does not forget his old specialty, the Verbena, of which he offers a new set.

CHARLES L. STARR, Avondale, Chester Co., Pa., makes a specialty of carnations, but has a full general list.

J. M. THORBURN & Co., No. 15 John St., N. Y.—A full list of Gladiolus, with other spring bulbs; also hardy perennial and small fruit plants.

ROBERT VIETCH & SON, New Haven, Conn., one of the oldest houses in the country, make but little noise, but have the plants, and choice ones.

H. W. WILLIAMS & Co., Galesburg, Ill., are growers of Gladiolus, and issue list.

WM. C. WILSON, No. 46 West 14th St., N. Y., and Astoria (L. I.), N. Y., make their catalogue for this year as much a wonder in the way of variety as ever.

WOOLSON & Co., Passaic, N. J., make a specialty of hardy plants, and their list for this year contains many not before offered.

FOREIGN.

J. A. SIMMERS, Toronto, Ont., Canada.—A copious and well-illustrated catalogue of about everything in the way of seeds.

MAX LEICHTLIN, Baden Baden, Germany, sends a catalogue of his remarkable private garden, from which so many choice things have passed into general cultivation.

HAAGE & SCHMIDT, Erfurt, Germany.—A seed catalogue that is immense, for the variety of its contents.

FARM AND GARDEN IMPLEMENTS, ETC.

COLBY & Co., Benton Harbor, Mich.—Fruit packages of all kinds.

CHADBORN & COLDWELL MFG. CO., Newburgh, N. Y., make the Excelsior Lawn-Mower, and, in a beautifully illustrated circular, offer a reduction in prices for both hand and horse patterns of this popular machine.

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GRAHAM, EMLEN & PASSMORE, No. 631 Market St., Philadelphia, Pa., makers of the Philadelphia Lawn-Mower, illustrate and describe the merits of the various forms of their excellent machines in a neat catalogue.

T. B. HUSSEY, North Berwick, Me., offers "Premium Plows," "Centennial" cultivator and reversible cultivator teeth.

U. S. WIND-ENGINE CO., Batavia, Ill., describe a variety of their small haying tools, a very effective grapple-fork, hay-carriers, etc.

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MISCELLANEOUS.

GEO. D. BISSELL & Co., NAUGATUCK, Conn., send a catalogue of their "Little Washer."

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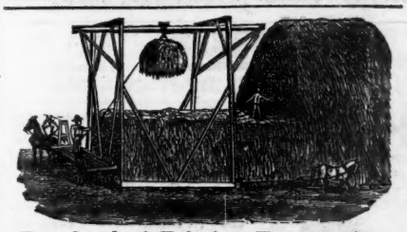

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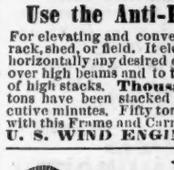

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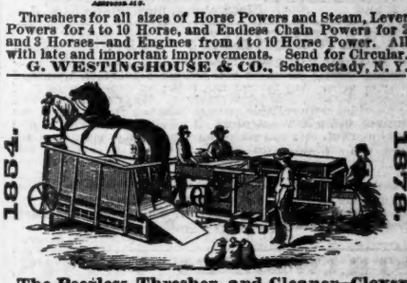

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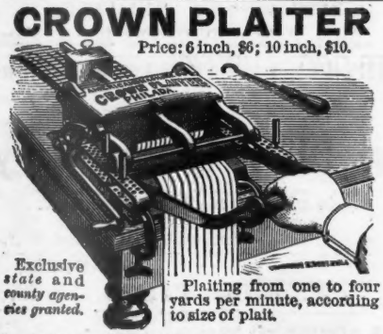

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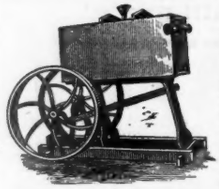

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No. 1 will have a cock that has scored 94 points.
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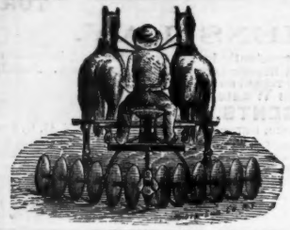

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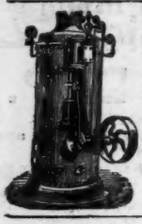

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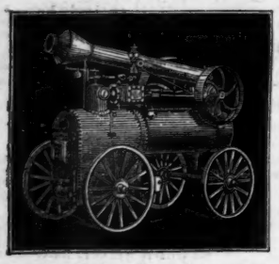

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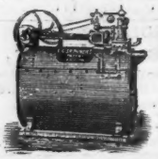

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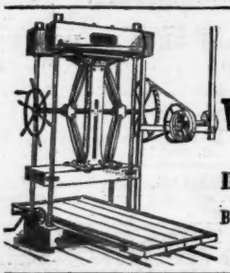

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